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ABSTRACT

Designed to provide direction for those who contemplate establishing a competency-based program for vocational teachers, this monograph contains major papers developed for the Institute on Competency-Based Teacher Education for Virginia Vocational and Technical Teacher Educators held in Blacksburg, November 23-26, 1975. Also included are two papers developed after the institute was held. Titles and authors are (1) "The Challenge of Competency-Based Teacher Education" by Ruth D. Harris and Curtis R. Finch, (2) "Competency-Based Education: Status and Research" by W. Robert Houston, (3) "Instructional Materials for Competency-Based Teacher Education" by James B. Hamilton and Glenn E. Fardig, (4) "Delivering Teaching/Learning for Competency-Based Education" by Daniel E. Vogler, (5) "Writing Competency-Based Education Modules" by Daniel E. Vogler, (6) "Concerns in the Implementation of Competency-Based Teacher Education" by Martha Lee Blankenship, and (7) "Toward a Framework for Implementing Competency-Based Teacher Education" by Curtis R. Finch and Ruth D. Harris. (WL)

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IMPLEMENTING COMPETENCY-BASED TEACHER EDUCATION: FUTURE DIRECTIONS FOR VOCATIONAL TEACHER EDUCATORS

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PREFACE

The purpose of this monograph is to provide direction for those who contemplate establishing a competency-based program for vocational teachers. This document should be of value as a basic resource in the area of competency-based teacher education (CBTE) and serve as a useful tool for CBTE program implementation and improvement.

The content for this publication evolved from the Institute on Competency-Based Teacher Education for Virginia Vocational and Technical Teacher Educators which was conducted in Blacksburg, Virginia, November 23-26, 1975. Major papers developed for this conference as well as two papers developed after the institute was held are included in the sections which follow. This document has been prepared in fulfillment of the objectives of an Educational Professions Development Act grant (EPDA project number 30050 A20) funded by the U. S. Office of Education.

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TABLE OF CONTENTS

Page

Preface ii

The Challenge of Competency-Based Teacher Education
Ruth D. Harris and Curtis R. Finch 2

Competency-Based Education: Status and Research
W. Robert Houston 14

Instructional Materials for Competency-Based Teacher Education
James B. Hamilton and Glenn E. Fardig 32

Delivering Teaching/Learning for Competency-Based Education
Daniel E. Vogler 81

Writing Competency-Based Education Modules
Daniel E. Vogler 92

Concerns in the Implementation of Competency-Based Teacher Education
Martha Lee Blankenship 102

Toward a Framework for Implementing Competency-Based Teacher Education
Curtis R. Finch and Ruth D. Harris 118

THE CHALLENGE OF COMPETENCY-BASED TEACHER EDUCATION

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THE CHALLENGE OF COMPETENCY-BASED TEACHER EDUCATION

If it were possible to gaze into a "crystal ball" and see teacher education in the year 2001, what would be visualized? Would Competency-Based Teacher Education (CBTE) be seen? If so, the following scenes might be viewed. Current problems involve demonstrating that you are competent as a teacher educator, obtaining your license to perform your role by fulfilling the fitness criteria and competently performing professional tasks. As you pass by the screening device hooked up to the latest model of the WXYZ computer system, you wish you could relive the Seventies, Eighties and Nineties. Accountability was an issue in those days but who believed that it would ever come about? Oh, yes, you remember all of those innovative programs: individualized instruction, behavioral objectives, open education, team teaching, relevant instruction, accountability, and competency-based teacher education. As these new terms came on the educational scene, you tossed them around in your mind for awhile but dismissed them because you figured that they would blow out as quickly as they blew in only with gale wind force.

Behavioral objectives, individualized instruction, criterion referenced measures, student accountability, and the systems approach were one thing, but competency-based teacher education was something else. Entirely! Or was it? Maybe it was a concept that developed out of the earlier education innovations and was spurred on by increasing demands for accountability, relevance, and cost-effective schooling. In those days, technological advances and readiness for competency-based teacher education programs were just emerging. Remember your boast: "The cost is too much; we will never be able to implement it...it's just another education fad."

Of course, you were kidding. After all you implemented it during the Eighties, and now you talk about costs in relation to benefits or effectiveness. Yes, you remember when competency-based education kept you on your toes.

Fantasy aside, take a serious look at competency-based teacher education and the challenge for the future. Today's student will spend more time in the 21st century than in the 20th. Simple arithmetic warns us how close we are to the new century; it is as close as 1952. It is becoming common to say that, given the current rate of knowledge growth, today's 18-year-old college student has access to only three percent of the knowledge that will be available to him/her when he is 50. Confronted with the changing school environment, taking a look at what is happening now leads to a pretty specific conclusion: we may not be taking our needed reformation of teacher education programs and its relationship to the real world of teaching seriously enough.

The movement toward competency- or performance-based teacher education has been inspired by the belief on the part of some individuals that it offers the potential of helping solve many of the problems associated with teacher education. CBTE has been described by some educators as "the most significant lever for educational reform since Sputnik" and as "one of the most influential and important developments in this progressive effort to advance the process of schooling" (Rosner and Kay, 1974). Others refer to it as an "old wine in new bottles," and "a good idea if you could figure out what it is."

Although some individuals may have doubts concerning its effectiveness, much is being discussed and written about competency-based teacher education.

Attempts to operationalize CBTE are increasing as the national movement gains momentum.

RATIONALE AND HISTORY OF COMPETENCY-BASED TEACHER EDUCATION

Competency-based teacher education is a concept that has developed over a number of years (Broudy, 1972; Rosner and Kay, 1974). The competency-based approach to teacher education grew out of dissatisfaction with programs existing in teachers, colleges and colleges of education. Broudy (1972, p. 1) states:

> The dissatisfaction is a fairly old story; the fires of criticism fanned by Bestor, Koerner, Rickover, the Council for Basic Education, and Conant in the late 50's and early 60's leaped higher than ever when fueled by the troubles of urban schools in the late 60's. The public was told that teachers oppressed and murdered children (at least in spirit) and that the public school, like God, was dead.

Efforts were made to combat the problem as it was beginning to be recognized by leaders in the field. Federal funds were invested in a variety of R & D efforts which stimulated recent advances in instructional technology. Both practicing educators and the educational research community were more willing to address themselves more closely to the problems of the classroom. Protocol and training materials were developed and field-tested. Much of the curriculum materials developed were individualized and personalized. These developments led to a focus on education that was more systematic and field-oriented. Instruction was tailored to specific student outcomes, student evaluation and program evaluation passed upon explicit goals.

Rosner and Kay (1974) indicate that competency-based teacher education seems to have been the culmination of all the recent efforts to improve and upgrade education programs. Many characteristics which have been associated with other recent advancements in instructional technology are also associated with competency-based teacher education.

The dissatisfaction with teacher education by some individuals was attributed to the gap between theory and practice. Teacher education programs were made up largely of academic studies, courses in professional education, and a student teaching experience. This curriculum did not guarantee the output of competent teachers who could successfully teach within the public schools and solve the many problems associated with their role as a classroom teacher. The approach offered through competency-based teacher education would evaluate and more closely guarantee the product, not the input which was supposed to produce the product.

DEFINITION AND CHARACTERISTICS OF COMPETENCY-BASED EDUCATION

A number of definitions of CBTE have been discussed in recent publications (Houston and Howsam, 1972; Finch and Hamilton, 1974; and Brooks, 1974). The most widely quoted and accepted definition was developed by Elam (1971, pp. 6-11). The Elam essay indicated that a teacher education program is competency-based if the competencies to be demonstrated by the student are derived from explicit conceptions of teacher roles, stated so as to make possible assessment of a student's behavior in relation to specific competencies, and made public in advance. The assessment of the student's competency uses his performance as a primary source of evidence although it takes into consideration evidence of the student's knowledge.

Competency-based teacher education proposes to analyze teaching into a set of operations or tasks in order to accomplish the needed reforms in eliminating the gap between theory and practice. The prospective teacher would be trained to reach competence and certified in each of the tasks necessary to become a competent teacher. Having gone through a competency-based program, the prospective teacher would be ready to cope with whatever might be encountered in the schools of the real world.

PROBLEMS AND ISSUES OF COMPETENCY-BASED EDUCATION

Advocates of CBTE point out the fact that the movement is not without its problems, criticisms and critics. Schmieder (1973, p. 24) states:

> Any movement as complex as that for competency-based education is sure to inspire a great many relevant--and even some not so relevant--questions and issues regarding developmental problems and priorities.

The critical questions and issues regarding competency-based teacher education have been discussed by several authors (Brooks, 1974; Finch and Hamilton, 1974; Broudy, 1972).

Brooks (1974, p. 7) listed six of the frequent criticisms of competency-based education:

1. The "sum of the parts" does not always equal the whole, and thus, the mere fact that students are able to demonstrate competence in isolation does not guarantee success in the classroom.
2. Because the competency-based program has as one of its foundations a systematic approach, it is mechanistic and dehumanizing.
3. A competency-based program claims individualization, and yet each student is expected to display the same competencies; this claim does not seem consistent.

4. Trivial behaviors are those most easily operationalized; the really important aspects of teacher education may be overlooked.
5. We really know so little about how children learn that it seems ridiculous to base a program on competencies that may not be the appropriate ones.
6. The really important areas of teaching are in the affective domain, and these are very difficult to categorize and measure.

These concerns have been discussed and excellent rebuttal statements have been presented in the literature supporting the competency-based education movement. Each teacher education program will have to resolve these questions concerning the value and effectiveness of competency-based teacher education for their own institution.

COMPETENCY-BASED TEACHER EDUCATION'S CHALLENGE

Rosner and Kay (1974) state that the long-range promise which CBTE challenges teacher education to accomplish is to improve the quality of instruction in the schools. This long-range promise is certainly a justification for CBTE. It is based upon two very important assumptions: (1) that effective public schools are largely dependent on the quality of teaching, and (2) that competent teachers can be prepared by teacher education programs.

As implied in the assumptions, more knowledge concerning relationships between elements of teacher education curriculum and indicators of effective schooling needs to be acquired. CBTE offers the intermediate promise that teacher education institutions will have the demonstrable capability of preparing knowledgeable and skillful teachers in curricula whose component parts have been tested for validity against criteria of school effectiveness. This implies that teacher education programs will be willing to subject the elements of their curricula to empirical test.

Professional recognition and commitment in CBTE is expected to result in more extensive support of teacher behavior research and the generation of interdependence between teacher behavior research and teacher education program development and implementation. Another challenge that CBTE offers is to stimulate widespread professional recognition of the hypothetical, tentative nature of various teacher education curriculum elements, and professional consensus on the need to validate these elements. CBTE should stimulate a commitment to tool up for the necessary development and research to strengthen teacher education programs.

A Challenge for the Faculty

The faculty who participate in competency-based instruction must have a strong commitment to the initial preparatory program for teachers and believe that it is a critical component of the total teacher education program. In implementing any new program time is needed and changes must be made which require adjustments on the part of the faculty. Giles and Foster (1975) indicate that efforts to solicit faculty participation have pointed out the importance of modifying faculty loads to account for the additional time and effort required in establishing the program. Recognition of the efforts and accomplishments of faculty members must be made and positive reinforcement given for faculty participating in an assignment demanding increased time for instruction and student contact.

A Challenge for the Students

Students are challenged to focus their attention upon their performance. A recognition must be made of the fact that their success will be judged on performance as opposed to strictly cognitive experiences. Grading will more than likely be on a "pass-fail" basis rather than by the conventional grading system. An adjustment must be made to the grading system. Students are challenged to participate in many more activities than are required in the traditional pattern. Since the assignments usually require continuous participation in a school setting, students are challenged to acquire and exhibit professional behaviors earlier than the student in the traditional teacher education program.

Students are challenged to develop the capacity for self-evaluation. This skill is developed early and requires the additional competency of evaluating with objectivity. Students electing the competency-based, field-oriented patterns of teacher preparation must recognize that they will forego many of the campus activities that would be available in the traditional program. Students are challenged to fulfill time commitments in the field which often preclude their participation in many campus activities.

A Challenge for Accountability

CBTE establishes a framework from which teacher education programs can demonstrate accountability. Knowledges, skills, and behaviors deemed necessary for beginning teachers, and the evidence acceptable for assuring that students possess these competencies are explicit and made public in advance. CBTE offers the immediate promise of increased prospects for accountability.

In competency-based teacher education the student is held accountable for performance. Not only are the competencies derived from explicit conceptions of teacher roles, they are also made public in advance so that students can work toward developing these competenices. The competencies are stated so as to make possible assessment of the student's behavior in relation to each. The criteria to be employed in assessing the competencies are based upon the competencies to be developed. The expected levels of mastery under specified conditions are also made public in advance.

Competency-based programs are systematically designed with continuous feedback which makes the program more accountable for funds spent within the program. The student's performance is used as the primary source of evidence that the student has developed competence as a teacher. Objectivity within the program is strived for in CBTE. Not only is the performance of the student assessed but also evidence of knowledge relevant to planning for, analyzing, interpreting, and evaluating the classroom.

Accountability is evidenced in competency-based teacher education by measuring the student's rate of progress by demonstrated competence rather than by time or course completion. The program utilizing CBTE will design the instructional program to facilitate the development and evaluation of the student's achievement of the competencies specified rather than unidentified fuzzy concepts.

This, then, is the challenge of competency-based teacher education. Let us hope that its course will continue to be charted wisely. The papers which follow serve to assist in this charting process. Each focuses on meeting the challenge which competency-based teacher education has provided for us.

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COMPETENCY-BASED EDUCATION: STATUS AND RESEARCH

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COMPETENCY-BASED EDUCATION: STATUS AND RESEARCH

ESSENCE OF COMPETENCY-BASED EDUCATION

What is competency-based education (CBE)? This question has been asked and answered, discussed and debated all too often, typically with confusing results. Each person reflects his own value system as he puts on his unique set of blinders and defines this movement. It has been pointed out elsewhere (Houston and Howsam, 1972) that CBE is a coined term, a term found in no dictionary. One could take each word, define it, then relate it to the others. Such a process would derive a description of CBE something like: "An educational program based on competencies." Such a description, however, does not deal with the central issue—what is competence? The specific characteristics of competence are personal, both in their demonstration and in their evaluation.

Each of us has a conceptual model of the competent professional, whether a teacher, physician, engineer, architect, or administrator. Our model may be quite explicit or it may be vague; it may be synergistic and wholistic; or it may consider only a minor portion of the tasks performed. It may or may not realistically reflect professional behavior or reality; but it is our model, and it directs our actions and reactions vis-à-vis that professional role.

Think about the physician. What do doctors do? How do they act? How do patients act when in their offices? Their behavior, and the patient's actions often are played out as a drama where the script is already written, only the precise lines of dialog need be completed. The individual's perception of the physician may be greatly in error. After all, few of them see the many facets of the physician's professional role; but what they see channels their conception of him.

Compare that role perception with that of a lawyer. Think of the client in an attorney's office. What role does he typically play? How does his role differ from expectations for the physician?

Consider other professional roles--social worker, accountant, teacher, engineer, school administrator. For each one, the individual has derived a model of expectation and a model of competence.

Competence, then, is a conceptual model of an effective professional which is based on experience. Each individual, whether in that role or not, has derived his own definition of competence. Usually he can characterize someone as competent or not, even though he has difficulty in articulating the criteria used in that judgment.

In most competency-based programs, the staff has somehow pooled these conceptions of competence and delineated a mutually acceptable list of competencies. These competencies are, in reality, indicators of competence.

Faculties have expended hundreds of hours deriving and refining these sets of competencies. Some have used only their own professional judgment; others have made extensive task analyses, formulated a theory, and deductively derived competencies from the theory. Others have relied on training programs from the past to define objectives for the future, and still others have sought to ground their set of competencies in the social fabric of our times and in the roles society has assigned to the professional.

Whatever means and procedures are used in developing a set of competencies, that set is a poor reflection of the conceptual model of competence. First, it includes only some of the elements of competence. Not all factors are, can be, or perhaps should be noted as competencies. The competency list typically includes only the most obvious indicators of competence. Second, those competencies listed often are based on training needs. As competencies are conceptualized by program developers, a mental screen seems to eliminate or modify those less conducive to educating the professional. Third, the written specifications apparently are never so good as the conceptual model. Somehow, as the mental picture is described in words, something is lost in translation. Last, the original conception was not singular but usually from many persons. The basic model was really models. The sum of competencies in a program, then, is only an approximation of competence.

Why spend so much energy in specifying competencies? Human nature and some research to date have indicated that persons are more likely to achieve delineated goals and objectives than fuzzy ones. (Duchastel and Merrill, 1973; Meunier, 1974; Dawley and Dawley, 1974; Duchastel and Brown, 1974). Further, professional education programs are more likely to teach to relevant objectives if their best efforts have served to specify the most appropriate approximation of the model professional.

Competency lists are very similar. Perhaps this is due to an effective communication network among developers but not entirely.

Many groups have identified competencies which resulted in similar lists regardless of the data base used in formulating them.

In February 1975, the results of a survey of competencies most desired by teachers were reported to the Annual National Conference of the American Association of Colleges for Teacher Education 1975). During 1973-1974, 1512 teachers reacted to a set of thirty-three competency statements as part of a series of needs assessment studies. The competencies, derived from task analyses of teacher practice, included three general areas: (1) design and evaluate instruction, (2) interact with students, and (3) professional behavior. A test booklet included: (1) a listing of these competencies, (2) a detailed description of subcompetencies, and (3) a nine-point self-assessment scale for each competency, with descriptors of competence at three of the levels. Teachers reacted to each of the thirty-three self-assessment scales in two ways: perceived current level of competence and perceived desired level of competence.

The pattern of their responses to desired competencies was clear and consistent. Competencies which specified interaction with students were clearly perceived as more important than those involved with designing or evaluating instruction or in other non-student interaction roles. The eight most desired competencies are listed below.

The teacher:

1. Organizes resource and materials for effective instruction.
2. Gives clear, explicit directions to students.
3. Responds to "coping" behavior of students.
4. Identifies clues to student misconceptions or confusion.

5. Provides for the appropriate use of a variety of communication patterns within the classroom.

6. Utilizes a variety of instructional materials and resources.

7. Builds self-awareness and self-concepts in students.

8. Reacts with sensitivity to the needs and feelings of others.

Competencies in the highest quarter (those most desired) included all four of the communication competencies. Competencies dealing with accessibility and use of instructional resources were included as were two of three interpersonal competencies (facilitating student self-awareness and affective interaction with others).

Those competencies are compared with the ones included in the bottom quarter of desired competencies which are listed below.

The teacher:

1. Administers and interprets assessment techniques (i.e., standardized tests and sociometrics).

2. Designs and uses teacher-made diagnostic tests.

3. Gathers information on individual differences among students such as interests, values, cultural and socio-economic background.

4. Groups students on basis of data.

5. States competency-based objectives correctly.

6. Plans activities with students.

7. Evaluates teaching behavior using coded instruments and plans for change on basis of results.

8. Interacts and communicates effectively with parents and community.

9. Works effectively as a member of an educational team.

Four of these competencies were concerned with collecting data and a fifth defined how data were to be used. It is a paradox that, while many teacher educators are concerned that teachers make decisions on the basis of data, teachers themselves rate this skill quite low.

Three other competencies teachers rated in the lowest quarter, all related to interaction, pose a second dilemma. Teachers rated planning with students, interacting with parents and community, and working as a member of an educational team among the least desired competencies. Although communication and interpersonal relations (primarily under the teacher's control) were highly rated, those involved with adults or on a less-controlled basis were rated considerably lower.

The pattern of teacher response seems to be more general than first believed. When the study was presented at AACTE, the audience was invited to discuss the findings. At that time several other studies were described. Their findings were amazingly consistent with the results of the Houston study.

The implications of these data for teacher preparation and inservice education are noteworthy. The focus of efforts should be on that phase of the job in which the professional directly interacts with his client. This does not preclude other concerns in the curriculum, but it does suggest a point of emphasis.

Research on teacher effectiveness or as Jere Brophy prefers to call it, optimal teaching, provides another perspective for identifying competencies. A national conference on research in teaching was held November 3-5, 1975 at the University of Texas at Austin. Most of the researchers in attendance were currently studying teacher effectiveness. For three days, they presented their findings from extensive observational studies, some conducted over a period of several years. Although they couched their conclusions in the conservative and tentative language of researchers, some general impressions of those findings from a practitioner seeking the best evidence are available.

No single variable was consistently important as a measure of teacher effectiveness; the configuration of variables, the context, and the interrelationship of student-teacher interaction were more powerful. Differences were found in effective teacher behavior between primary and intermediate grades and between low and middle socioeconomic areas.

Clearly evident was the effect of direct instruction on student achievement. Rosenshine (1975) summarized studies by Stallings, Soar, and Brophy and Evertson on primary grade reading and mathematics achievement. He described direct instruction as an approach where:

> . . . the teacher is the dominant leader of the classroom activities, one who decides which activities will take place, and who directs without giving reasons. A good deal of time is spent on number and reading activities using textbooks and academic workbooks or in verbal interactions directly on reading and mathematics. Students are supervised by the teacher while they work, and there is little free time or independent-unsupervised activity. Students usually work in small or large groups. Teacher questions or workbook questions tend to be narrow and at the child's level so that pupils have a high percentage of correct answers. The questions usually have only a single answer, and the teacher immediately reinforces the answer as right or wrong. There is little discussion of the answers. Correct answers are followed by another question, incorrect answers are followed by the teacher giving the answer. The learning is approached in a direct and business like way and is organized around questions posed by the teacher or materials provided by the teacher.
>
> There are two ways to describe the opposite from direct instruction. In the Follow Through programs, which contained programs ranging from highly structured to highly inquiry oriented, the opposite to direct instruction were classrooms in which there was more game-like activities, and art work, and where play was an object in itself. The pupils had free choice, free work groups, and frequent socialization. The teacher approaches learning in an informal manner, organizes learning around a pupil's own

> problem, encourages pupils to express themselves freely, asks open-ended questions on academic and non-academic topics, and joins in the pupils' activities.

Time involved in learning activities seems to be related to student learning. When classes were observed over long periods, the amount of time each student was actually engaged in instruction was amazingly short. Berliner cited cases where the teacher allowed 45 minutes for students to complete a task, but individual students worked as little as three and one-half minutes on it. McDonald reported in a California study that individual students were engaged in actual reading instruction only 40 hours a year, even though reading was identified as one of the most important subjects. Teachers should consider their own practices in terms of the actual time each student actually is engaged in meaningful learning activities. They should consider the class as a whole, and from the perspective of individuals in the class. Further, teachers may need to reconceptualize organization and management to accomodate greater teaching time. For students from lower socioeconomic homes, time becomes even more critical. Their absence rate is higher while the amount of study time out of school is lower, reducing still further the time spent on learning.

Researchers concluded that structure seemed to facilitate learning while chaos was disfunctional. They found praise to be moderately but not strongly related to student achievement. The pattern of praise was important with those who praised often, being less effective than those who reserved it for special cases. Corrective feedback to students by the teacher was an important correlate of teaching effectiveness, but it rarely occurred.

Simply having a wide variety of materials available to students was not related to effectiveness; neither was multiple instructional options. The appropriateness rather than number of instructional resources was important. When students were engaged in independent activities, the availability of the teacher to assist students elicited positive results.

Class discussions are not so prevalent as often thought. In the primary grades, higher order questions were disfunctional, but lower order questions were positively related to learning. Pupil-pupil interaction rarely occurred.

Although teacher perception and research findings may not produce conclusive results and cannot be rigidly employed in program design, they provide some directions for practitioners. Summaries of research such as those by Rosenshine and Furst (1971) and interpretations by Good and Brophy (1973) and by Dunkin and Biddle (1974) provide a wealth of clues for improved teacher education.

EXTENSIVENESS OF CBE IMPLEMENTATION[1]

Conference programs and professional chatter would indicate that many institutions are engaged in competency-based programs. Critics might add that they were lured there by federal dollars, power-hungry state education departments, and fast-talking colleagues. The actual extent to which CBE is being implemented probably cannot be known, but CBE is extensive and growing.

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[1] The author is indebted to Karl Massanari for his assistance with data in this section.

Several years ago, the AACTE (1973) conducted a survey of 1250 institutions preparing teachers, asking if they were operating, investigating and/or planning CBTE programs. Of the 783 respondents (a 63 percent return), 131 (17 percent) said they were operating CBTE programs, 228 (29 percent) said they were not, and a large number, 424 (54 percent), said they were in some stage of investigation.

In May 1973, Educational Testing Service in conjunction with AACTE (Sherwin, 1974) conducted a follow-up survey of the 131 institutions that had identified themselves as having competency-based programs in the initial survey. Seventy-five usable responses were received. A large proportion of the respondents, 71 percent (53 institutions), had operated CBTE programs less than two years. Most of the CBE activity occurred at the undergraduate level. According to the returns, a total of 24,399 students were engaged in CBE programs.

State education departments have assumed more proactive stances in the development of certification plans. Some confusion has resulted in the literature between Competency-Based Education and Competency-Based Certification. Resolutions in professional association meetings and writings and speeches by educators attacking CBE often are supported by data on certification/credentialling requirements. This has been true particularly in New York where a CBE mandate is being implemented.

During the past five years, every state has studied CBE/Competency Based Certification (Pittman, 1975). Twenty-six states have revised their teacher education and certification standards, resulting in approved Program Approaches. Of the 29 states who now utilize the approved Program Approach, 17 either have developed separate CBTE standards or the approved Program Approach, which permits the state to encourage CBE. Twenty-three states have produced documents which specifically address either CBE or CBC.

Thirteen states have formed a national consortium to share information, materials, and training procedures, and to help member states to develop management systems for competency approaches to teacher education and certification. The Multi-State Consortium is composed of Arizona, California, Florida, Michigan, Minnesota, New Jersey, New York, Oregon, Pennsylvania, Texas, Utah, Vermont, and Washington.

Professional organizations and learned societies have reacted to the CBE movement in a variety of ways. The National Education Association condemned it as being premature in a 1974 resolution passed by NEA General Assembly.[2] The American Federation of Teachers has supported CBE while vocally condemning certification based on such processes. Social science and humanities associations typically have been opposed to the movement while more technically oriented associations have supported it or remained silent on the issue. Table 1 summarizes a study of professional organizations made by Massanari (1974). Of 91 associations polled, 67, or 74 percent, responded to the survey.

The Research and Development Center for Vocational Education at Ohio State University has specified a set of competencies and pilot tested over 100 supporting instructional modules. A national CBE center in the liberal arts has been established at Bowling Green University. The School Library Manpower Project administers six experimental CBE program models.

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[2] The motion was made and seconded by two New York representatives with much of the discussion confusing mandated certification with educational process.

Dentistry, nursing, medicine, allied health, business administration, law, social work, engineering, and nuclear radiology are but some of the fields outside teacher education in which CBE is being employed. Several liberal arts colleges are experimenting with a CBE approach.

Table 1

CBE Activities by Professional Associations

Activity	No.	Percent
Actively Involved in Some Way	40	60
Session(s) on CBTE at Regional or National Conference	33	49
Committee Studying CBTE	32	48
Published or Planning to Publish Article(s) on CBTE	33	49
Developed or Are Developing:		
List of Competencies	20	30
Position Statement	17	25
Engaged in Experimental Work in CBTE	7	10

At the federal level, Teacher Corps, Fund for the Improvement of Post Secondary Education, and Career Education are among programs highlighting CBE approaches. The Free University of Iran opens in 1977 as a completely competency-based institution. Teachers colleges in Israel, Saudi Arabia, and England are studying CBE. UNESCO sponsored a week-long training conference in 1973 for its chief technical advisors from around the world. An innovative project in technical education operates in Munich and one on basic education functions in Brazil.

The mass of published materials about CBE has grown in the past three years. Many of these materials are redundant, but a growing realization can be perceived of the power of the movement, the need for less rigid systems, the evolving creativity of approaches, and the growing number of persons who have just discovered CBE.

JUST A FAD?

In the summer of 1975, an Iranian educator asked if CBE was just another American fad. He recalled "teacher proof" curriculum materials, computer-based instruction, interfacing, and other terms and movements that seemed to perish just as they became known. His conclusion was that Americans thrive on the new and different and that they cannot stabilize long enough to test the worth of a movement or idea.

Perhaps CBE is just another fad. However, its roots are deeply embedded in basic American traits. The focus on objectives, on pragmatic results, on refinement based on feedback is part and parcel of the free enterprise process. The name may change, but the basic tenets of the movement will remain as residuals in most future educational endeavors. With rapidly developing technology and a changing society, the basic philosophy and concepts of CBE remain the most viable approach. Because of its regenerative process, CBE should lead to even more effective preparation processes and movements.

Professionals continually feel they are pressed to produce results. The doctor must cure his patient; the lawyer free his client; the teacher facilitate student learning. Dr. Ann Olmsted, sociologist on the medical faculty at Michigan State University, pointed out in a recent meeting of a Phi Delta Kappa National Commission that general practitioners in medicine could be characterized as simply keeping the patient alive until his natural body functions made him well. The parallel with teaching is all to evident. Some teachers may be contributing to student learning by keeping them in a school while their natural curiosity and instincts stimulate learning. Research studies reported earlier tend to support this. More effective teachers are those who teach and teach directly, structure their instruction, and engage students actively over longer time periods in learning activities. They know what their goals are, and they teach to those goals.

Research on teacher effectiveness at the elementary school and high school levels may be equally applicable in universities. Direct instruction, time on tasks, corrective feedback by teacher, and structured learning may be important ingredients in the process.

The emphasis of competency-based education on objectives which are reality oriented and based on practitioner needs, which include instruction tailored to objective achievement, which employ evaluation that compares achievement with objectives, and which use corrective feedback to improve practice may provide the process for improved professional practice.

Charles Kuralt, in one of his television series "On the Road," summed up an American philosophy and spirit with these lines:

> As our country reaches for its 200th year, we realize
> It is not how old are you
> But what have you done, and
> What can you do.

These comments also reflect the spirit of the competency-based education movement. The *essence* of competence is *doing*, not simply knowing how or what to do. The ultimate criterion of such actions is in accomplishments, in results, in the consequences of actions. The prospects for improved education the years ahead are indeed bright.

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INSTRUCTIONAL MATERIALS FOR PERFORMANCE-BASED TEACHER EDUCATION

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INSTRUCTIONAL MATERIALS FOR PERFORMANCE-BASED TEACHER EDUCATION

INTRODUCTION

Seldom in the history of teacher education has an idea received such widespread interest and rapid acceptance as has performance-based teacher education (PBTE). Developmental work is proceeding in a number of research and development centers, traditional teacher education programs are being modified to meet some or all of the criteria of PBTE, and the installation of completely new PBTE programs is being contemplated in a great many teacher education institutions.

In spite of this, there is much that is still unknown about how best to design curricula and how to organize and manage PBTE programs. It is the purpose of this paper to bring together some salient information about the current status of PBTE as it relates to vocational education and to describe a rational approach to PBTE program development. Particular attention is given to the urgent problems involved in constructing and refining individualized instructional materials that incorporate the principles of PBTE. The work of the Performance-Based Curricula Program at The Center for Vocational Education has provided a basis of knowledge and experience for much of what follows.

Material has been drawn from the following relevant documents prepared by Center staff:

James B. Hamilton and May W. Huang, Resource Person Guide to Using Performance-Based Teacher Education Materials.

Robert E. Norton, Lois Harrington, and Janet Gill, Performance-Based Teacher Education: The State of the Art.

Glen E. Fardig, Robert E. Norton, and James B. Hamilton, Guide to the Implementation of Performance-Based Teacher Education.

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PBTE DEFINED

PBTE is an approach to teacher preparation in which the teacher is required to demonstrate essential teaching tasks in an actual teaching situation. Actual performance of the tasks insures that the teacher has not only the knowledge required but also the ability to perform competencies (knowledge and teaching skills) that are essential to successful teaching. Many traditional teacher education courses have tended to place emphasis on the theory of teaching rather than focusing upon the specific teaching skills needed. In PBTE programs, individuals must demonstrate their ability to perform as teachers in an actual classroom. Traditional teacher education programs and state certification regulations have focused on giving teachers the necessary number of courses with the proper course titles in order to meet graduation and certification requirements. In PBTE programs, the focus is upon demonstrating specified competencies essential to successful teaching.

The terms "Competency-Based Teacher Education" (CBTE) and "Performance-Based Teacher Education" (PBTE) are often used synonymously by educational leaders. Some educators, however, distinguish between the two terms. The use of the word "competency" emphasizes the fact that learning in competency-based programs is structured around the identified and verified competencies needed by teachers. The term "Competency-Based Teacher Education" is, therefore, appropriate for any such teacher education program structured upon identified teacher competencies. In performance-based programs, the work "performance" is used to emphasize the fact that these programs require teachers to demonstrate their ability to perform the essential competencies in an actual classroom setting. The Center's Professional Vocational Teacher Education Curricular materials are structured upon identified and verified teacher competencies which the learner is required to perform in an actual teaching situation. Regardless of the terminology preferred by individual practitioners, the preparation of the individual to perform effectively in the teaching role remains of utmost importance.

CHARACTERISTICS OF PBTE PROGRAMS

The study of widely accepted concepts of PBTE and of many individual PBTE programs has resulted in the identification of several characteristics of teacher education programs which are considered essential if the program is to be considered a PBTE program. These essential characteristics are:[1]

1. Competencies to be demonstrated by the student are identified, based upon what a teacher must know and be able to do. The competencies are stated as behaviors which

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[1] Adapted from American Association of Colleges of Teacher Education, Achieving the Potential of PBTE: Recommendations, PBTE Series: No. 16 (Washington, D. C.: American Association of Colleges for Teacher Education, 1974), pp. 32-33.

can be assessed and are shared with the student at the beginning of the program.

2. Criteria to be used in assessing each specific competency are stated, including the conditions under which assessment will occur and the expected level of mastery. Criteria are also shared with the student at the start of the program.
3. The instructional program focuses upon development and evaluation of the specified competencies by the student.
4. Assessment of the student's competency uses his/her performance in the teaching role as the primary source of evidence. Objective evidence of the student's knowledge related to planning, analyzing, interpreting, or evaluating situations or behavior are also considered.
5. The student's rate of progress through the program is determined by demonstrated competency rather than by time or course completion.

In addition to the above essential characteristics there are several additional desirable characteristics of PBTE programs. These include:

1. Instruction is individualized and personalized.
2. The learning experience is guided by feedback.
3. The program as a whole is systematic.
4. Emphasis is on exit, not on entrance requirements.
5. Instruction is modularized.
6. The student is held accountable for performance.

Although many of these have long been associated with sound instructional practice, they are particularly relevant to PBTE programs.

PBTE AND TRADITIONAL PROGRAMS CONTRASTED

It is evident that a great deal of emphasis is placed upon the identification, attainment, and assessment of teaching competencies. It may be helpful in describing PBTE programs to contrast several features of PBTE programs with features often used to characterize traditional teacher education programs. In Figure 1, characteristics of seven aspects of conventional vocational teacher education programs are contrasted with the same aspects for PBTE programs. These contrasts are presented as general contrasts between the two types of programs. However, it should be noted that in examining individual conventional teacher education programs, one or more of the program features characterizing PBTE programs might be found.

CURRENT STATUS OF PBTE: VOCATIONAL TEACHER EDUCATION[2]

As one would expect, the growth of PBTE for vocational teachers has tended to parallel that of general education. However, there are several distinct differences. The U.S.O.E. funded Elementary Models Projects, which served as a catalyst for PBTE at the elementary teacher level, were perceived as having little direct relevance for vocational and technical teacher education. Thus, vocational teacher educators were somewhat slower than other groups with regard to setting up PBTE programs. In fact, much of the current effort in PBTE is, at least in part, based upon research completed at the Ohio State Center (Cotrell and others,

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[2] Adapted from Curtis R. Finch and James B. Hamilton, "Competency-Based Instruction for Vocational Teachers: Current Status and Future Prospects." Paper presented at the Southern Agricultural Education Conference, Williamsburg, Virginia, 1975.

	CONVENTIONAL	P/CBTE
OBJECTIVES	GENERAL	SPECIFIC AND BEHAVIORAL
CONTENT	TEXTBOOK(S), LECTURES	MODULES, MULTI-MEDIA
NATURE OF INSTRUCTION	GROUP ORIENTED- LECTURES, RECITATIONS	INDIVIDUAL ORIENTED- SELF-PACED STUDY, TUTORING
EVALUATION	TESTS, QUIZZES, AND WRITTEN EXAMS: NORM-REFERENCED	PERFORMANCE IN SCHOOL SITUATIONS: CRITERION-REFERENCED
FEEDBACK	SELDOM	FREQUENT
EMPHASIS	ACHIEVING GRADES- KNOWING	ACHIEVING COMPETENCE- DOING
COMPLETION	TIME-BASED	PERFORMANCE-BASED

Figure 1. Program Features
of Conventional and P/CBTE Programs

1972). This data base seems to have served as a starting point for a number of PBTE programs designed to meet the needs of vocational teachers. For example, Michigan, Texas, Oregon, Illinois, and Mississippi utilized the competencies identified by Cotrell and others (1972c) as a basis for their own curriculum research and development efforts. In many cases, competencies were verified at state and regional levels and then programs devised which built upon these competencies.

Current indications are that a number of vocational teacher education institutions are designing and implementing PBTE programs. In fact, several vocational teacher education departments are leading the way in this regard (e.g., Temple University, University of Nebraska, Wayne State University, University of Minnesota).

Response to a recent request by the Ohio State Center for state directors to nominate institutions to participate in The Center's advanced testing of performance-based vocational teacher education curricula resulted in responses from 37 states and nominations of some 70 institutions. Letters requesting inclusion in the testing were received from 40 of these institutions. Other indicators of the PBTE movement's strength in vocational teacher education are the results from a recent market survey which the Ohio State Center conducted relative to projected demand for use of its performance-based curricular materials. Over three-fourths of the 237 respondents indicated that they had competency-based teacher education programs in operation or in the planning stage.

For the benefit of those who are considering PBTE program implementation, it may be meaningful to provide brief descriptions of a few successful programs. These are representative of the work that is currently going on across the country.

At the University of Minnesota, the preservice "Teaching Methods in Agriculture" is competency-based, individualized and modularized. This program consists of 29 modules, 23 of which must be satisfactorily completed prior to student teaching. One learning laboratory is provided for group discussions and simulated teaching with peers, while another is equipped with carrels for individual study, listening and viewing. Facilities are also provided for small group discussions, and viewing and critiquing of student videotapes as well as tapes of master teachers. Student performance is assessed under simulated teaching conditions prior to student teaching and also during student teaching experiences.

University of Nebraska's "Preparation by Prescription for VO-AG Teachers" focuses on the development of 74 teaching behaviors needed by first-year teachers of vocational agriculture. To provide students with the ability to perform these behaviors, 30 challenges (learning tasks with assignment sheets and audiotape discussions) were developed. During the first five weeks of the "professional semester" students work on demonstration, writing, explanation and performance tasks on an individualized basis. Each student views "Master Teacher" videotape situations and participates in at least 10-12 critiqued micro-teaching sessions prior to the six weeks of student teaching. Following student teaching, an intensive five-week class-laboratory-workshop Program Planning Course allows each student to proceed at his/her own pace through 16 challenges (53 objectives) involving audiotape programmed instruction. A learning laboratory provides students with opportunities to listen and complete assignments and provides teacher educators with an opportunity for individual and small group instruction. Each assignment is graded, and unsatisfactory performances are redone until judged satisfactory.

A number of other PBTE activities may be mentioned to illustrate the wide-ranging and pervasive nature of the ongoing effort.

1. Faculty at Wayne State University have established an across-the-board PBTE program in a typical four-year vocational teacher education context. The Wayne State program is most comprehensive and has now been operational for several years (Cook and Richey, 1975).
2. At Temple University, a PBTE program has been implemented to meet the in-service needs of trade and industrial teachers. Perhaps the most notable aspect of Temple's program is that it is entirely field-based. That is, teachers may develop competencies in the schools rather than on the campus of the University (Adamsky and Cotrell, 1975).
3. University of Michigan's PBTE program is designed primarily for aspiring occupational teachers who transfer from community colleges. The use of competencies enables students to complete baccalaureate degree requirements in a minimum amount of time (Vogler, 1975).
4. Seventeen states have mandated the approach as a full new or alternative system for teacher education and certification; 15 others are considering similar action. Several states plan full implementation within the next several years.

5. Approximately 500 institutions of higher education have pilot programs, about 120 have large operating programs, and 15 have institution-wide programs.
6. Thirty-one states have joined the Interstate Certification Project concerned with the mobility of educational personnel and interstate reciprocity of teaching certificates. A major focus of the 74-75 program is on transferability problems relating to competency-based education.
7. Fourteen states have formed a national consortium for the purpose of sharing information, materials, and personnel and for helping member states to develop management systems for the development and use of performance-based approaches to teacher education and certification.
8. There is a National Clearinghouse on PBTE at the American Association of Colleges for Teacher Education in Washington, D. C.
9. An Institute for Research and Development of Competency-Based Teacher Education Programs has been formed in the College of Education at Wayne State University.

Due possibly to the speed with which the PBTE movement has swept the nation, the pressure of mandates, or a zeal to improve teacher education programs, many programs and projects presently under development or in operation have incorporated varying pieces of the form of PBTE, frequently without capturing the real substance of PBTE. There are a wide range of activities being conducted under the banner of PBTE: modules without programs; programs without (or with loosely defined) competencies;

competencies without programs; programs which equate field-based with competency-based; programs with competencies but without performance; programs with performance but without competencies, etc. The following section describes some of the varied research and development efforts going on relative to the identification and validation of competencies, the development of curricular materials, the development and implementation of programs, and the development of assessment procedures and instrumentation.

COMPETENCY IDENTIFICATION AND VALIDATION

Patricia Kay (1975) identified three basic procedures for deciding what competencies should be included in a PBTE program. From least to most operational they are: (1) theoretical approaches, (2) task-analytical approaches, and (3) course conversion approaches. Kay says that probably no program has used only one approach that most likely contains elements derived from all three. She further delineates the task-analytic approaches into the following five sub-categories: (1) basic task-analytic procedures, (2) analysis of the teaching performance associated with curriculum packages, (3) school learner needs assessment, (4) analysis of projected teaching roles, and (5) empirical hypothesis generating.

The task or role analysis procedure with its many variations is probably the most commonly used by vocational educators. This approach typically involves identifying the competencies involved in teaching in a given area or at a given level by: (1) conducting a search of the literature; (2) asking teachers working in that area and/or at a given level to describe what they do, what they feel they should be doing; and what additional skills they feel they need; and (3) asking teacher educators, supervisors, and administrators to describe and verify what teachers do and/or should be doing. Criticism of this approach stems from the fact that this procedure may perpetuate the status quo, since it tends to emphasize competencies which represent what teachers do, and not necessarily what teachers do or should do that, in fact, promotes student learning.

One type of task-analytic approach, the school learner needs assessment approach, appears most desirable and is yet perhaps the most difficult and least useful at this time. While the goal among teacher educators has long been to train teachers in the skills which will result in maximizing student achievement, to date there has been no research which conclusively links particular teacher behaviors to specific student achievement. Nonetheless, efforts to identify competencies using this procedure have been attempted. For example, in Minnesota, The Task Force to Study Programs Leading to Certification for Teachers of Social Studies (1973) started with the identification of "pupil outcomes toward which a competent teacher makes progress." From there, they generated a list of "teacher behaviors which facilitates achievement of pupil outcomes." Finally, they developed a list of "competencies which facilitate those teacher behaviors."

The course conversion procedure is also very frequently employed, particularly in states where a mandate has been issued. This approach commonly results in the translation or reformulation of present courses into new statements of behavioral objectives or competencies. The knowledge and skills a teacher should possess are inferred from the current course content. As with the task-analytic procedure, this approach tends to perpetuate the status quo and hence is not likely to result in many significant program changes. An advantage of this approach, however, is that it is expedient—changes can be made quickly and at relatively low cost.

The theoretical approach, while conceptually very promising, is undoubtedly the most costly and difficult to utilize. This approach requires extensive study and research and a high degree of both technical skill and conceptual expertise among program developers. Theories and models of learning and human behavior are complex and abstract and require a great deal of interpretation and extrapolation. There is also the limitation that theoretically derived programs can only be successful if the underlying theories used are, in fact, accurate descriptions of the realities of the teaching process.

In specifying competencies by any one of these three procedures, there has been an attempt made in most cases to identify teaching competencies in each of the three learning domains: cognitive, psychomotor, and affective. Although critics have repeatedly accused PBTE programs of being dehumanizing and mechanistic, in many programs special efforts have been made to include the affective element. One of the categories specified by Benson, et.al. (1972) is "Nurture Humaneness." Florida International University's list of competencies includes "provide positive teacher-student interaction." Weber State's competencies include "interaction skills." The University of Texas at Austin composed each competency using a synthesis of three parts: problem solving, human relations, and job task. Likewise, the affective element is evident throughout the Cotrell elements and criteria and the University of Nebraska's NUSTEP program.

One variable involved in competency generation is the level of specificity of the competency statements. To illustrate, the following list contains examples of various persons or institutions that have identified teacher competencies and the number of competencies they identified:

Michigan State Model Elementary Program	2,700 competencies
Cotrell	384 performance elements
Wright	327 teaching tasks
Courtney	130 items
Walsh	197 competencies
Burke	80 competencies
University of Texas at Austin	27 critical competencies
Florida International University	7 generic competencies
Lehigh University	4 competencies
Hite	2 competencies

Compare the scope of one of Cotrell's 384 competencies, "Write a Lesson Plan," with the scope of Hite's two competencies: Teachers can state objectives, and Candidate's pupils demonstrate growth consistent with stated objectives.

How many original competencies are identified and what level of specificity is used is not critical, however. What is critical is that each competency is ultimately broken down to a level of specificity which is measurable. Each of Cotrell's 384 elements is further broken down into measurable criteria. For example, the element, "Write a Lesson Plan," is broken down into eight criteria, one of which is "The lesson was based on the specific student performance objectives." Similarly, at the University of Texas at Austin, the 27 critical competencies are broken down into 143 major competencies which, in turn, are broken down to 246 specific competencies. Therefore, while competencies may vary in scope and breadth, the ultimate product of the competency identification process must be measurable criteria if the program which is developed around these competencies is to be, in fact, performance-based.

Another variable is the level of mastery for which the competencies were identified. The Cotrell study attempted to identify all the competencies important to the *successful* vocational teacher. On the other hand, the State University College of New York at Buffalo and the Frieder model (Okey, Brown and Levie, n.d.) sought to identify competencies for the *beginning* teacher only. Many institutions have started with existing competency lists and selected from those lists the competencies which specify the level of mastery for which they are training teachers at their particular institution, state, or instructional area.

The validation procedures used by program developers to authenticate the competencies which were identified are, for the most part, similar to the procedures used to identify them. Although the term "validation" is used, it is more nearly a "verification" process. Lists of competencies were (1) compared to other lists; (2) given to educators at all levels and rated as to the importance of each item; (3) subjected to Q-Sort and Delphi techniques; and (4) compared to the literature.

Using these identification and validation procedures, or some combination thereof, a large number of competencies have been generated. There are lists of competencies generic to all teachers and lists of competencies needed by teachers of specific areas: Industrial Arts, Agriculture, Distributive Education, English, Elementary, Social Studies. What is needed now, according to Warmbrod (1974), is not identification of more competencies, but an effort to make sense and order out of the ones we have; that is, determine which ones do make a difference. Research is underway at a number of institutions for the purpose of relating teaching behaviors to student learning. The National Institute of Education (NIE) is supporting projects in this area by the Far West Lab, the California Commission for Teacher Preparation and Licensing, and the Research and Development Center for Teacher Education in Austin. According to Rosenshine (1974), large scale studies about the relationship between teaching competencies and student achievement are also underway at the Center for Educational Policy Research at Harvard, the Institute for Development of Human Research at the University of Florida, the Stanford Research Institute, the Bureau of Educationally Handicapped, and at the Purdue Educational Research Center.

MODULE DEVELOPMENT

For most of the PBTE programs currently in existence, specified competencies have been formed into some type of printed package. Most packages are called modules, some are called ILPs (Individualized Learning Packages), and some LAPs (Learning Activity Packages). While modules are not an essential characteristic of PBTE, their flexibility and adaptability facilitate performance-based instruction. Some PBTE materials have been given special institutional or other type names (e.g., POP KITS, WILKITS, WAYNE KITS, MINN MODS). These packages vary in length from one-page outlines to totally self-contained booklets which include all necessary information and directions for use. The outline-type modules serve primarily to make public the competencies; many are similar to course prospectuses. Since two of the most desirable characteristics of PBTE are that instruction should be self-paced and individualized, the most fully developed, self-explanatory modules seem preferable. The majority of modules developed thus far do not include options for performance of the skill in an actual teaching role; the final experience or post-assessment tends to be of the paper-pencil variety or the student's performance in a simulated situation is assessed using a performance checklist or the resource person's subjective judgment. The modules produced by The Center for Vocational Education are unusual in that each module includes (1) a final learning experience which always involves student performance in an actual school situation, and (2) use of a "Teacher Performance Assessment Form" which lists detailed criteria for successful performance. If there is a single point at which existing programs break down in their quest to become truly competency- or performance-based, it is probably in the area of final assessment. If student competency is measured by a paper and pencil test, or if competencies are specified only to serve as a structure for course development and not as a basis for assessment, then PBTE is little different than the traditional course-approach to teacher education.

Existing modules generally have fairly similar elements as follows:

1. A listing of prerequisites
2. Directions for using the module; often this is handled using a flow chart
3. Rationale or introduction explaining the importance of the competency being covered
4. A listing of performance objectives: terminal and enabling
5. A listing of terminology, resources and materials needed
6. Preassessment—usually a short-answer test
7. Explanation of the activities to be completed in order to reach each objective; this is often in chart form
8. Information sheets
9. Feedback devices—most often essay or objective tests
10. Post Assessment—usually a short-answer test, but in some cases performance at the planning or simulation levels is involved, and occasionally performance in an actual school situation

The activities involved in most available modules are structured to offer the learner a number of alternate routes for reaching an objective. In addition, optional, enrichment, or quest activities are frequently included for the learner who desires to pursue a particular subject further. Activities typically involve reading, role-playing, planning, reacting to case studies, video-taping performance for critiquing by peers, and discussion. A number of modules also include recycling activities so that a student who does not achieve a particular objective initially can get further information or practice without repeating the exact same activities.

Module development models are proliferating. Most of these models conscientiously practice what they preach. For example, Heath at Oregon State University and Houston, et.al. (1972) have developed modules on writing modules; Kapfer and Ovard (1971) have developed an Instructional Learning Package on preparing and using ILPs; and Hyder (1971) has developed a Learning Activity Package on constructing LAPs. Drumheller (1971), Frantz (1974), Hauenstein (1973), and Silvius and Bohn (1975) have contributed to the area by producing documents explaining systems approaches to curriculum development. Arends, Masla, and Weber (1973) have produced the second edition of their CBTE module development handbook. Others, such as Fardig (1975), have produced handbooks or guides for the development of modules for secondary and post-secondary technical subject matter instruction. Additionally, many modules which have been developed by teacher education institutions as part of their PBTE programs are available and can serve as models.

DEVELOPMENT OF THE CENTER'S PBTE CURRICULUM

The Center for Vocational Education, The Ohio State University, has developed a Performance-Based Vocational Teacher Education Curriculum especially designed for use in implementing pre-service and/or in-service PBTE programs in vocational education. These PBTE curricular materials consist of 100 Professional Vocational Teacher Education Modules, a Student Guide, and a Resource Person Guide. The development of this curriculum involved three major phases: (1) the research base, (2) development of curricular materials, and (3) testing and revision of materials.

These three developmental phases, to be followed by a dissemination phase, are shown in diagram form in Figure 2.

THE RESEARCH BASE

Center work began with two research projects to determine the essential teacher competencies of vocational teachers. Approximately 1,000 vocational teachers, supervisors, and teacher educators were involved in the identification and verification of 384 performance elements, or competencies, considered essential for vocational teachers.

In the first phase of the study, essential competencies needed by teachers of conventional programs were identified. These were the teaching competencies needed by secondary and/or post-secondary teachers in agricultural, business and office, distributive, health occupations, home economics, technical, and trade and industrial education. This study resulted in the identification of 256 common competencies (competencies needed by teachers in two or more of the seven service areas studied).

The second phase of the research study sought to determine the essential teacher competencies needed by teacher coordinators in cooperative programs, namely off-farm agricultural, wage-earning home economics, office occupations, special needs, and trade and industrial education. A total of 385 teacher competencies were identified including those identified in Phase I of the study. These competencies were clustered into ten categories representing ten areas of vocational teacher responsibility. The findings of Phases I and II were then merged into one comprehensive list of 390 competencies and later reduced to a total of 384

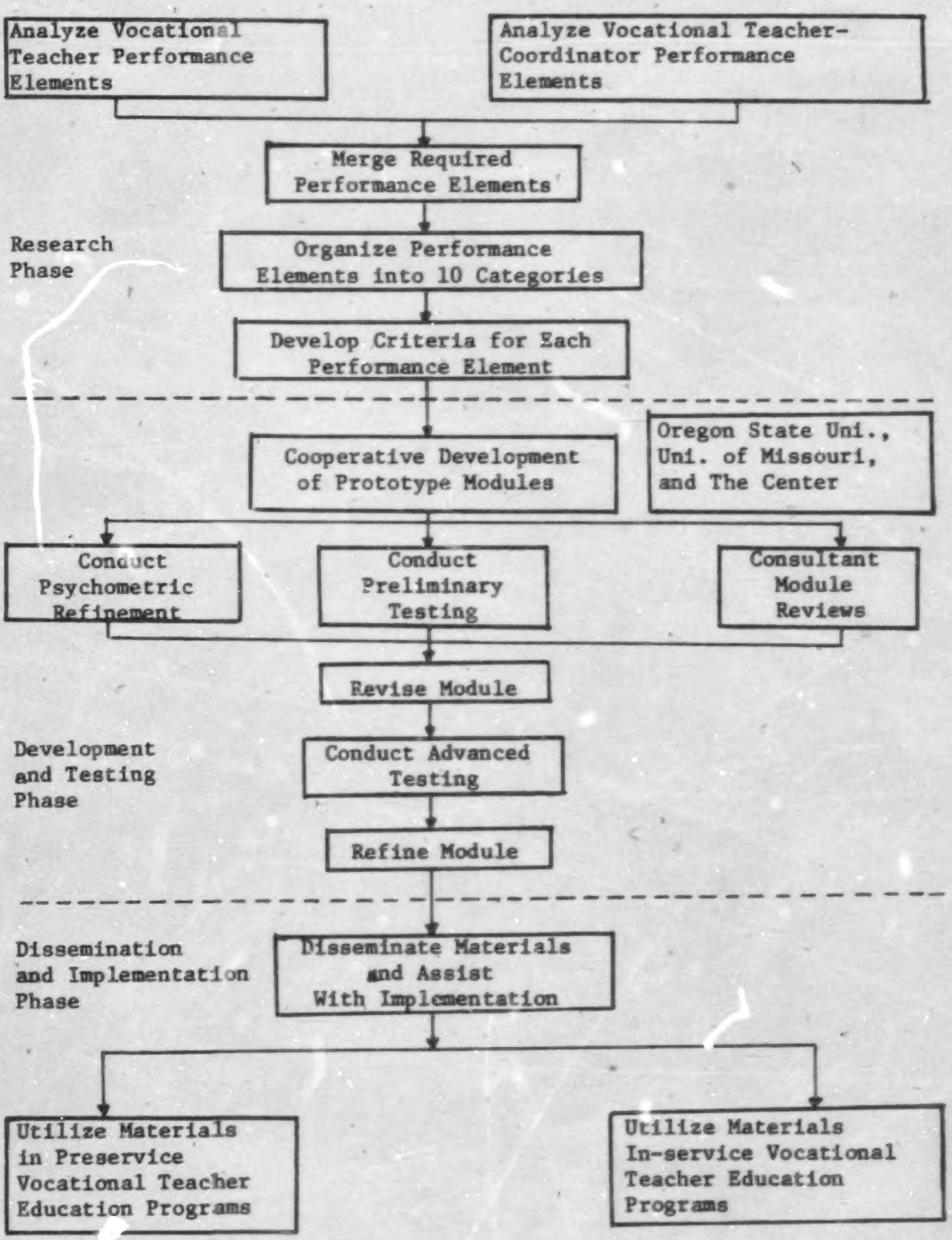
Analyze Vocational Teacher Performance Elements
Analyze Vocational Teacher-Coordinator Performance Elements
Merge Required Performance Elements
Research Phase
Organize Performance Elements into 10 Categories
Develop Criteria for Each Performance Element
Cooperative Development of Prototype Modules
Oregon State Uni., Uni. of Missouri, and The Center
Conduct Psychometric Refinement
Conduct Preliminary Testing
Consultant Module Reviews
Revise Module
Development and Testing Phase
Conduct Advanced Testing
Refine Module
Dissemination and Implementation Phase
Disseminate Materials and Assist With Implementation
Utilize Materials in Preservice Vocational Teacher Education Programs
Utilize Materials In-service Vocational Teacher Education Programs

Figure 2. Phases of the PBVTE Curricula Development

through elimination of duplication. These vocational teacher competencies are organized into the following categories:

A — Program Planning, Development, and Evaluation
B -- Instructional Planning
C — Instructional Execution
D — Instructional Evaluation
E -- Instructional Management
F — Guidance
G — School-Community Relations
H — Student Vocational Organizations
I — Professional Role and Development
J — Coordination

Finally, a set of performance-oriented general objectives specifying the task and the general criteria for evaluating a teacher's performance of the stated activity was developed.[3]

DEVELOPMENT OF CURRICULAR MATERIALS

Following the identification of the 384 vocational teacher competencies, work was initiated to develop the necessary curricular materials for implementing PBTE programs at the preservice and in-service levels for all vocational service areas. The curricular materials are in the form of individualized learning packages, or modules, each of which has as its base one or more or the 384 competencies. By basing the modules on the verified competencies, there is solid assurance that the objectives of the modules actually represent competencies needed by vocational teachers.

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[3] Calvin Cotrell, et.al., Model Curricula for Vocational and Technical Teacher Education: Report No. V—General Objectives, Set II (Columbus, Ohio: The Center for Vocational Education, The Ohio State University, 1972).

To further assure that the materials developed reflect the actual needs of vocational teachers and that the materials would be acceptable by all vocational areas, the module development process was structured to ensure maximum involvement of persons actively engaged in vocational teacher preparation. Each module was originally developed in cooperation with vocational teacher education faculties at Oregon State University in Corvallis, and University of Missouri in Columbia. Center staff worked with the writing teams at the institution sites.

An organized procedure of development, review, and revision was followed by the writing teams at each of these sites during the initial module development. Following the development of each module to the satisfaction of the faculty at the site, the module was then forwarded to the other site to be reviewed and critiqued by their faculty. Each module also was reviewed and critiqued by Center staff. Finally, a synthesis of all faculty and staff reviews was developed, and the module was revised by Center staff. From this process, 118 Professional Vocational Teacher Education Modules were developed and revised in preparation for initial testing.

TESTING AND REVISION OF THE MATERIALS

Initial testing of the performance-based curricular materials was carried out at Oregon State University, University of Missouri-Columbia, and Temple University. Each of the 118 modules was used by a minimum of 10 pre-service and/or in-service vocational teachers at one or more of the test sites. Reaction forms were completed by each student for each module used and by each faculty member or resource person for each module they administered. In addition, in-depth taped interviews were conducted to clarify and gain additional feedback from students and resource persons for a sampling of the modules tested.

Concurrently, the California Testing Bureau of McGraw-Hill conducted psychometric refinement of the objectives and assessment instruments in each of the 118 modules. Several individual modules and entire categories of modules were also reviewed and critiqued by independent consultants and subject matter experts during this phase of the study.

Using the inputs from students and resource persons, the psychometric refinements, and the consultant reviews, each of the modules underwent major revision of content and format. A rigorous revision process was employed utilizing module revision teams of three persons each and standardized procedures to assure consideration of all inputs and to maintain standards of quality and uniformity in the materials. Several recombinations of performance elements were suggested by module users during the preliminary testing phase. Incorporation of these suggestions resulted in a reduction from a total of 118 modules to 100 modules.

Advanced testing of the materials is being conducted at 17 sites in diverse geographic areas and settings as well as several differing PBTE program structures. Feedback from each individual and each resource person using the modules is being gathered to further improve the materials. User feedback will also provide information as to the characteristics of the user and how well the materials serve his/her needs. Following completion of the advanced testing and refinement of the materials, the Center's PBTE curriculum will be released for publication and dissemination.

A concerted effort has been made in the development of the modules to keep them consistent with the essential principles and concepts of performance-based teacher education. At the same time, the instructional materials have been made as attractive and convenient to the learner as possible. The following are some of the major features included in the module design:

1. Each module focuses on one or more verified vocational teacher competencies.
2. Modular design provides maximum flexibility for designing individualized programs.
3. Learning experiences allow for individual or group instruction.
4. All modules are suitable for preservice and/or in-service education.
5. Most modules are self-contained.
6. Optional resources include printed and multi-media materials.
7. The design permits use of local situation-specific materials.
8. Each module culminates with student assessment of the competency in an actual school situation.

The Center's instructional modules encompass the learning of a single identified objective or a small group of related objectives that can be learned effectively together. All of the learning activities presented in each module are directed toward achievement of the stated objective(s). Basically linear in instructional design, there is, however, provision for individualized learning activity options and for the by-passing of learning activities by trainees who have acquired the designated competence through previous experience.

The instructional module consists of a number of components, each supporting and contributing to the strength of the whole. While the individual module is intended to be used as an instructional entity, the resource person may enrich the learning experiences and modify the instructional mode to meet the needs of individual learners. Although module structure varies somewhat depending on the subject matter content, the typical instructional sequence is given below. A graphic representation of the sequence is present in Figure 3.

1. A statement of the terminal instructional objective is provided for the student.
2. Cognitive knowledge necessary for the performance of the competence and its application is provided.
3. Opportunity for planning experiences is provided.
4. Opportunity for practice performance or simulated performance is provided.
5. Optional activities are suggested (for enrichment and for trainees with special interests).
6. Alternate activities are given for activities that may be difficult to complete (e.g., activities calling for the use of peers).
7. The trainee may select learning experiences depending on previous experience or personal need.

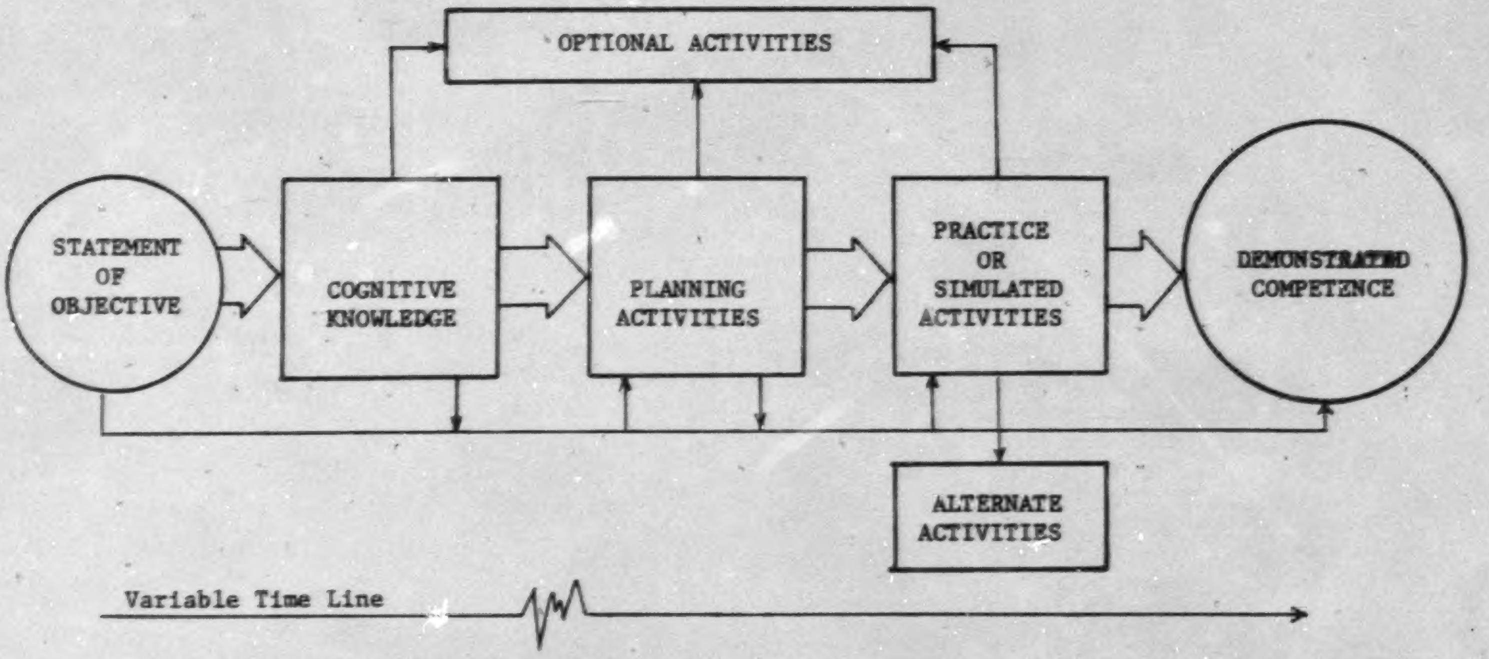
OPTIONAL ACTIVITIES
STATEMENT OF OBJECTIVE
COGNITIVE KNOWLEDGE
PLANNING ACTIVITIES
PRACTICE OR SIMULATED ACTIVITIES
DEMONSTRATED COMPETENCE
ALTERNATE ACTIVITIES
Variable Time Line

Figure 3. Typical Instructional Sequence for CVE Modules

8. Feedback and reinforcement are provided the trainee at the end of each learning experience.
9. Final demonstration of the specified competence takes place in an actual school situation.
10. The already competent trainee may "test out" of the module by going directly to the final experience.

PBTE AS AN INSTRUCTIONAL SYSTEM

Performance-based teacher education is conceived by Center staff as a system for the development and delivery of the instructional program—from identification of teacher competencies to teacher professional effectiveness. In this systematic approach, each component supports the others and each, in turn, is affected by the requirements of others. All of the components are directed toward providing an instructional gestalt in which the resource person and teacher trainee can work together cooperatively in the process of learning. Following is a brief description of the necessary components in this process, with a graphic representation given in Figure 4.

1. The system should be built on a group of verified competencies (e.g., Cotrell's list of 384 competencies needed by vocational teachers).
2. Overall structure and specific format of instructional materials must be developed.
3. Instructional modules should form the instructional core of the system.

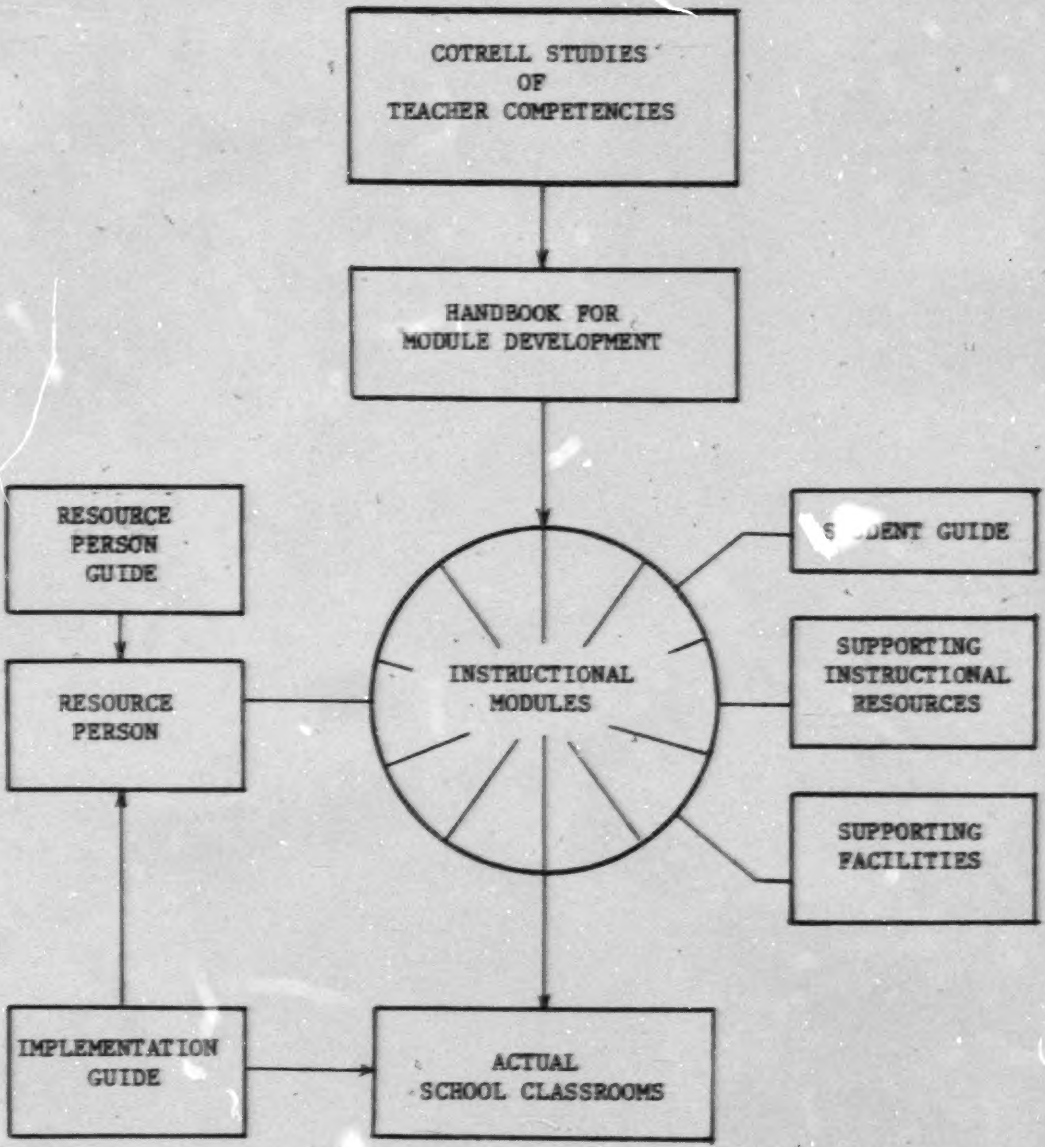
COTRELL STUDIES
OF
TEACHER COMPETENCIES
HANDBOOK FOR
MODULE DEVELOPMENT
RESOURCE
PERSON
GUIDE
RESOURCE
PERSON
INSTRUCTIONAL
MODULES
STUDENT GUIDE
SUPPORTING
INSTRUCTIONAL
RESOURCES
SUPPORTING
FACILITIES
IMPLEMENTATION
GUIDE
ACTUAL
SCHOOL CLASSROOMS

Figure 4. CVE Performance-Based Vocational Teacher Education Delivery System

4. A student guide is needed to orient trainees to the PBTE approach.
5. Supporting instructional resources, including printed materials, multi-media materials, etc., need to be developed.
6. Supporting facilities needed include a resource center, videotaping studio, viewing room, conference rooms.
7. The resource person is an integral and essential component of the system. The resource person acts as advisor, helper, coordinator, and evaluator.
8. A resource person's guide helps the teacher educator to function in a new and perhaps unfamiliar role.
9. The implementation guide assists in the processes of organizing and managing the PBTE program.
10. Actual school classrooms are essential for the final demonstrated performance of the competency.

MODULE EVALUATION

Evaluation of the Center's materials is a continuous process. It begins as the modules are conceptualized and continues as the modules are designed, developed, field tested, and implemented in a teacher education program. Input from evaluation may be informal and subjective, or formal and empirical. Ideally, evaluation is a never-ending effort.

Each curriculum designer should develop evaluative criteria based on the underlying educational philosophy and approach of the performance-based teacher education in which he or she is working. Many criteria, however, will be common to all PBTE instructional materials. The three evaluation instruments in Appendixes A, B, and C have proven useful in materials-development projects and may be adapted by program constructors to fit their particular needs. The first (Appendix A) asks broad questions about the bases and content on which the module is constructed. The second (Appendix B) is a more specific checklist, designed to focus on each element of the module. The third (Appendix C) is a very detailed device that may be especially useful in the final refinement stages of module development.

Appendix A. Evaluation of Performance-Based Instructional Packages

1. Is it competency based?

   a. Does the terminal objective require actual performance of a task or tasks of the occupation?

   b. Is there a series of explicitly stated objectives leading to the terminal performance?

2. Does it treat the "Why" and "How" of the performance?

3. Do the learning experiences deliver on the objective?

   a. Is there a series of logically sequenced learning experiences leading to performance of the actual task or tasks?

   b. Are the learning activities reasonable expectations considering demands for physical resources, student time, and resource person time?

4. Does it culminate with assessment of actual performance with a comprehensive listing of performance criteria provided?

5. Does it contain clearly stated, easy to follow directions?

6. Is flexibility provided for the student to select learning experiences appropriate to individual needs?

7. Does it have a high degree of utility--can it realistically be implemented in the field?

8. Is it attractive?

Appendix B. Module Assessment Checklist

MODULE NO.____________________ MODULE TITLE:_______________________

ELEMENTS	YES	NO	?	COMMENTS
1. The introduction:				1.
a. describes what the student will learn.				a.
b. tells the student why the competency is needed.				b.
2. The directions are correct and explicit.				2.
3. The objectives are correctly stated.				3.
4. The learning activities:				4.
a. are consistent with the objectives.				a.
b. provide sufficient opportunity for the student to learn.				b.
c. are practicable and feasible.				c.
d. are appropriate to the student level.				d.
e. are clearly and succinctly stated.				e.
f. include a variety of learning modes.				f.
g. are limited to the necessary knowledge and skills.				g.
h. are free from harmful side effects.				h.
i. are largely self-instructional.				i.
j. provide student reinforcement.				j.
k. provide practice of skills in controlled settings.				k.
l. provide simulated or real-world tryout of competency.				l.
5. Student self-checks:				5.
a. are directly related to the objective				a.

ELEMENTS	YES	NO	?	COMMENTS
b. cover the required knowledge				b.
c. provide the student with feedback				c.
6. The instruction sheets:				6.
a. are clearly and correctly titled.				a.
b. are written at the student's level.				b.
c. provide the essential information.				c.
d. include appropriate instructional illustrations.				d.
e. are adequate in scope and depth.				e.
7. The instructor's final checklist:				7.
a. is in correct format.				a.
b. measures student acheivement of the module objectives.				b.
c. is limited to the competencies stated in the objective.				c.
d. states the desired performance in unambiguous terms.				d.
e. is based on observable student performance or the product of performance.				e.

Appendix C. Module Review Checklist

MODULE TITLE:________________________ REVIEWED BY:__________________

Language

1. The terminology is defined in the introduction or information sheets. YES NO
2. The terminology is consistent throughout. YES NO
3. The directions are simply and clearly stated, and complete. YES NO
4. The performance objectives are stated in measurable terms. YES NO
5. The directions clarify the performance objectives; they are not simply a restatement of the performance objectives. YES NO
6. The directions clarify what the performance is, how to do it, and why it is necessary. YES NO
7. The language is lively and interesting; it is not merely mechanical. YES NO
8. The language is geared to the level of an average reader. YES NO

Learning Experiences

1. Learning experiences are sequenced logically. YES NO
2. Learning experiences do not overlap. YES NO
3. Learning experiences lead to competency in the performance objective. YES NO
4. All required readings contribute directly to attaining the objective. YES NO
5. All required activities contribute directly to attaining the objective. YES NO
6. When an activity may be difficult to implement, alternate ways of completing the activity are provided. YES NO
7. Optional learning activities are provided to give depth and flexibility to the learning experience. YES NO
8. A range of activities is provided to accommodate students of different abilities, needs, and interests. YES NO

9. A range of activities is provided to allow for both individual and group work. YES NO

10. Role playing activities include role descriptions and situations to guide anyone playing a role outside his/her own frame of reference. YES NO

11. The learning activities are varied and interesting, with a minimum of repetition from one learning experience to another. YES NO

Information Sheets (Criteria in the "Language" section apply here)

1. The module is self-contained, if possible, and practical. YES NO

2. Information sheets contain up-to-date information. YES NO

3. Information sheets are concrete and tangible, not just vague generalities or lists of criteria; they tell "how-to." YES NO

4. Information sheets are relevant to vocational education, with examples drawn from various service areas of vocational education. YES NO

5. Outside resources require less than 30 pages of reading per learning experience. YES NO

6. Outside resources are not more than 10 years old (unless they are of exceptional value). YES NO

7. There are three or fewer outside references per learning experience. YES NO

8. Outside references are standard enough that they should be readily available to any module user. YES NO

Self-Checks, Model Answers, Checklists

1. Self-checks are not simply rote activities, and are not obvious without the information provided in the learning experience. YES NO

2. Self-checks comprehensively reflect the information provided in the learning experience. YES NO

3. Model answers (which do more than parrot the information in the readings) are provided to reinforce learning. YES NO

4. Checklists are stated in observable, performance terms. YES NO

5. Checklists include all criteria necessary for successful performance. YES NO

6. Checklists actually assess the learner's progress toward the objective. YES NO

7. Alternatives to peer evaluation are provided for those learners who cannot arrange to work with peers. YES NO

8. Each feedback device includes a stated level of performance. YES NO

9. Evaluations provide for recycling if the level of performance is not met. YES NO

Media

1. The media is applicable to all vocational service areas. YES NO

2. The media illustrates, clarifies, reinforces, or extends the concepts introduced in the module; it doesn't simply repeat them. YES NO

3. The media is realistic, i.e., the teacher, students and real school setting are believable. YES NO

4. The length of the media is reasonable (10 to 20 minutes). YES NO

5. The media is interesting visually/aurally. YES NO

6. The media is clear visually/aurally. YES NO

7. If the media includes an exemplary instructor, the instructor:

    a. relates well with students. YES NO

    b. uses student feedback. YES NO

    c. uses media or teaching aids where appropriate. YES NO

    d. presents information geared to the needs of the students. YES NO

    e. teaches on the basis of up-to-date learning theory. YES NO

8. The media is free from racial and sex bias. YES NO

9. The media is lively and action-oriented. YES NO

10. The information is presented in a logical manner. YES NO

Overall

1. The module delivers on the objectives. YES NO

2. The module meets "new format" specifications. YES NO

3. Module is internally consistent (objs., directions, feedback devices, etc. do not contradict each other, directly or indirectly). YES NO

4. No learning experience other than the final learning experience requires performance in a real school situation. YES NO

5. Opportunity is provided for practicing any performance which must be executed in the real world. YES NO

6. The final learning experience requires performance in an actual school situation. YES NO

7. The learning experiences are realistic; i.e., they do not require an unreasonable amount of prior knowledge or of time on the part of the learner. YES NO

8. The module is easy to implement; i.e., it does not require an unreasonable amount of the resource person's time. YES NO

9. Learning activities, information sheets, case studies, resources, etc. provide across-the-board representation of the various service areas in vocational education. YES NO

10. An introductory statement is provided which motivates the student by explaining why the competency is needed, not simply what the competency consists of. YES NO

11. An introductory statement is provided which places the module in a frame of reference with other modules in the category, and with the broad theory of vocational education. YES NO

12. All necessary prerequisite competencies are listed. YES NO

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DELIVERING LEARNING/TEACHING
FOR COMPETENCY-BASED EDUCATION

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DELIVERING LEARNING/TEACHING FOR COMPETENCY-BASED EDUCATION

INTRODUCTION

A cursory review of the previous papers indicated that "Competency-Based Teacher Education: A National Perspective," "Competency-Based Programs and Materials for Vocational Teacher Education," and "Service Area Focus on Competency-Based Teacher Education" have been addressed. This particular paper and the paper which follows address the knowledges, skills, and hopefully attitudes necessary for the development of competency-based teacher education materials.

This paper may best be described in terms of eight questions. The questions are: (1) What are Vogler's CBE perspectives? (2) What is CBE? (3) What are the products of CBE? (4) What are the functional components of CBE? (5) What is learning/teaching? (6) What is the delivery strategy? (7) What is the jargon? and, (8) What is the function of a module?

WHAT ARE VOGLER'S CBE PERSPECTIVES?

Most existing teacher education programs have evolved over time. The teacher educator's interests, textbooks, teacher certification requirements, college degree requirements, inherited course syllabi, and a multitude of other variables have contributed to this evolution. All too often the variables have had little to do with the knowledge, skills, and attitudes required by teachers. Thus, the teacher education curriculum has often addressed teacher competencies through happenstance rather than by design.

One alternative to a happenstance curriculum is to utilize competencies in the development of professional teacher education programs. In 1971, The University of Michigan embarked upon such a project to develop a teacher education program utilizing competencies as a foundation. The project was funded by the State of Michigan, Department of Education, Division of Vocational-Technical Education Services. This developmental project resulted in an operational, competency-based, upper-division, comprehensive occupational teacher education program. Graduates of the program exited with a Bachelor of Science degree in education; provisional, general certification; and provisional, vocational certification, with each prepared to teach his or her vocational area.

A residual outcome of this project has been the development of a personal perspective on competency-based education. The perspective can best be indicated by the following five observations related to competency-based education.

1. Teacher education curriculum developers and implementors often expect too much from competencies, goal statements, and performance objectives. These components are communication devices. To expect more from them than communication will lead to serious problems.
2. The delivery of learning experiences by modules has often been considered the singular system for providing the non-field based instruction. Although a modular option is very desirable, it should only be an option. Other delivery systems, including traditional group instruction, may be more appropriate for a given situation. Further, adoption

of a modular competency-based delivery system would be unrealistic at this time. The current materials available to deliver a modular system are limited. Although materials could be purchased, the materials would require revision for specific situations. Finally, to expect that all students learn best under a modular system would be as much in error as to believe that all students learn best with traditional systems.

3. Followers of CBTE often believe that the evaluation problems of teacher education will be solved with a competency-based approach. The performance objectives with criteria of reference provide an excellent means of communicating the evaluation intentions. However, the mechanics of evaluation for a large group of objectives and a large group of students are huge. The problem is magnified when consideration is given to other variables. Example variables include assessing students upon entry, measuring durability of competence, relating competence to teacher certification, recycling current or returning students, evaluating field-based competence, and determining psychomotor and affective competence.
4. The emphasis in a competency-based program often shifts to exit requirements. Although this is very appropriate and consistent with the competency-based model, reality suggests that attention must also be given to entrance requirements. The expertise to accurately evaluate a prospective teacher

does not exist. Thus, the student ratio of entrance to exit remains out of balance, and a tendency to permit incompetence prevails.

5. Administrative decision makers often believe that a competency-based program will reduce the number of teacher educators while increasing the number of teachers prepared. Teacher educator aides can relieve the teacher educator of certain duties. Modules can replace scheduled classes. Cooperating teachers can assume more responsibilities in teacher education. However, the nucleus of a good teacher education program is dependent upon low teacher/student ratios and student access to the expert teacher educator.

WHAT IS CBE?

Competency-based education is equal to performance-based education. Competency-based teacher education is equal to performance-based teacher education and is one example of competency-based education. Competency-based teacher education does not have sole rights on the whole competency-based education movement. Competency-based teacher education is only one example of the total movement. Hopefully, competency-based teacher education can spawn teachers who will be competency-based in their operations. To put it differently, one should not be concerned with which came first—the chicken or the egg. The important point is to have a chicken capable of producing eggs. The remarks that follow should be applicable to both CBE and CBTE.

A more direct and less circular double talk definition of competency-based education might sound something like this: the organizational structure of learning/teaching which permits description in advance of the knowledges, skills, and attitudes that a student should possess upon exit from a program or course.

WHAT ARE THE PRODUCTS OF CBE?

Historically, teachers have assumed the authority and the responsibility for the learning/teaching environment. The result has been a teacher-centered approach to education. Competency-based education can produce four outcomes that would be more closely aligned to student-centered education. The four CBE products are: (1) a shift of responsibility from the teacher to the student, (2) a shift of emphasis from learning process to learning outcome, (3) a clarification of instructional intent, and (4) setting of the stage for evaluation. The interface and importance of these four products will emerge through responses to the remaining advance organization questions of this presentation.

WHAT ARE FUNCTIONAL COMPONENTS OF CBE?

The functional components of competency-based education may be divided into two categories. The first category is an advanced organizer or communication device. Goals, competencies, performance objectives, and syllabi comprise the category. All four devices should be developed in the planning stages of education.

The second category of functional components of competency-based education is the delivery strategy system. This category includes learning/teaching experiences and criterion-referenced testing. The category equates to the implementation phase of education. CBE learning/teaching experiences may emanate from group, individualized, and combination strategies. The latter strategy may utilize both small groups and individualized instructional packages. The learning/teaching strategy will be elaborated in a following section of this presentation.

Criterion-referenced testing is the ultimate CBE tool for it requires that the performances of students be compared to standards specified in performance objectives. Upon completion of criterion-referenced testing, the development/implementation loop is completed.

WHAT IS LEARNING/TEACHING?

Learning/teaching may best be described using the problem-solving model. This model is comprised of five basic questions: Where am I now? Where am I going? Why am I going? How am I going to get there? How do I know when I'm there? The words "student" or "teacher" may be substituted for the word "I." Thus, the model becomes: Where is the student going now? Where is the student going? Why is the student going? How is the student going to get there? How does the student know when he is there? Likewise, the model may read: Where is the teacher now? Where is the teacher going? Why is the teacher going? How is the teacher going to get there? How does the teacher know when the teacher is there?

The substitution of the word "teacher" or "student" into the problem-solving model makes it consistent with the products and the components of CBE. To illustrate, the student problem-solving model provides for the shift of responsibility to the student. The emphasis shifts to student learning outcomes; and therefore, the instructional intent is clarified. Finally, the notion of how does the student know when he is there sets the stage for evaluation.

The teacher problem-solving model is consistent with CBE in that the components of CBE require advance organizers. As noted earlier, the CBE advanced organizers are goals, competencies, performance objectives, and syllabi. The natural consequence is a problem-solving process which is complementary to CBE.

WHAT IS THE DELIVERY STRATEGY?

Traditionally, learning/teaching has been provided in the group setting. The teacher is the authority figure and usually is placed at the front and center of the group. An alternative for teacher-centered instruction is student-centered instruction. This can be facilitated by self-contained learning/teaching tools called modules. Both strategies have their advantages and disadvantages. Consequently, a third learning/teaching strategy can evolve which is a combination system. The combination stsategy permits the use of either group techniques or individualized techniques. Further, the combination strategy retains the large group instructional option.

The tools for group, individualized, and combination strategies are units, modules, and Mo-Uns. Group instruction usually is organized by units which break into lesson plans. Individualized instruction is usually organized into modules. The format and components will be addressed in the "Writing a CBE Module" presentation. The combination instruction may be organized into a device, which for lack of a better word, is called a Mo-Un. A Mo-Un utilizes the first two letters of module and the first two letters of unit, and in practice uses both lesson plans and modules. Figure 1 illustrates the group, individual, and combination delivery strategies. Figure 1 further identifies the learning/teaching delivery tools.

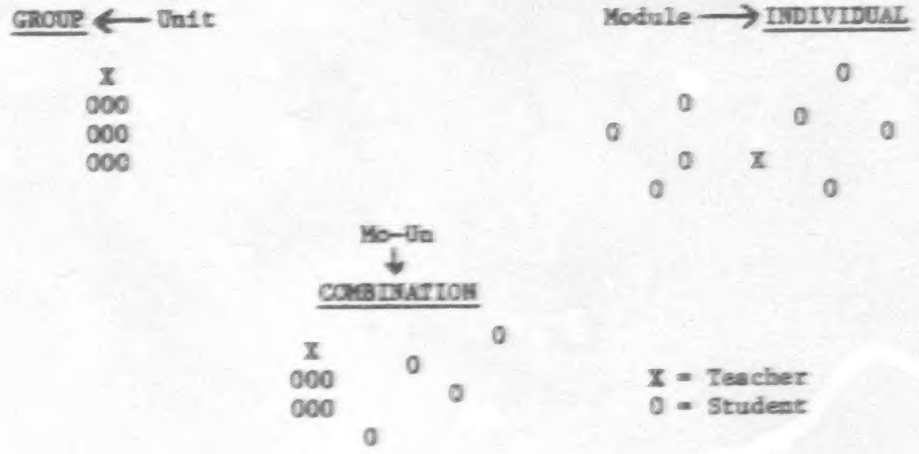

Figure 1. CBE Delivery Strategies

WHAT IS THE JARGON?

Professors keep their jobs by inventing new words for use with old definitions. Several professors have been fully employed in the development of CBE. They have brought in special definitions of modules, mo-uns, goals, performance objectives, pre-assessment, post-assessment, criterion of reference, criterion-reference testing, and many others. As one moves through CBE materials, one will have questions regarding the definitions. The safest approach is to use common sense and to accept the idea that there appears to be no one right definition for any of the terms. Therefore, you are given the license to be creative and to define and invent your own new words.

WHAT IS THE FUNCTION OF A MODULE?

Modules may be defined as self-contained learning/teaching tools. The module may be used in the individualized or in the combination strategy. The module is the crucial element for individualized or combination strategy. Therefore, the importance of modules and the ability to write them becomes paramount.

The module functions are illustrated in Figure 2. One should note that the ultimate function of modules is flexibility for the presentation of instructional content.

SUMMARY

This paper has briefly addressed eight questions related to "Delivering Learning/Teaching for CBE." Scrutiny of the information permits one to deduce that CBE is consistent with contemporary learning/teaching theory and principles. CBE mandates a planning and execution scheme which is in harmony. Finally, CBE affords an opportunity for progressive change in education.

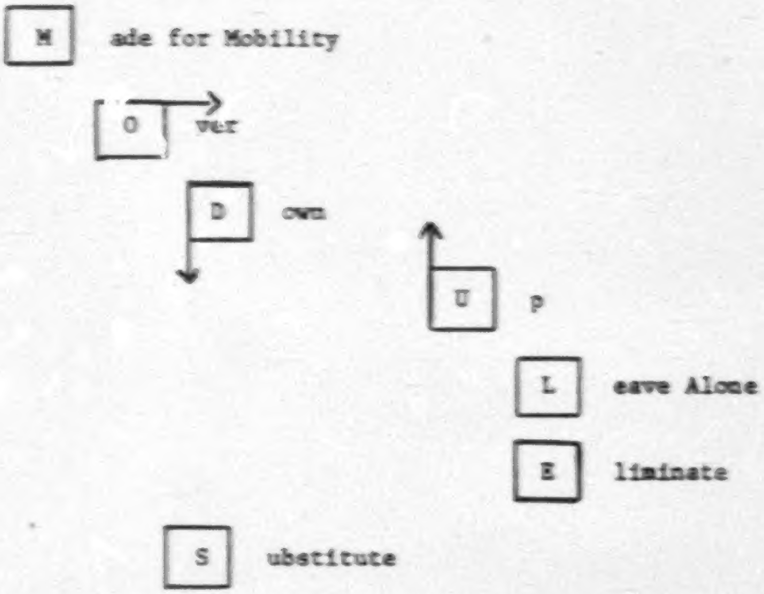
M ade for Mobility
O ver
D own
U p
L eave Alone
E liminate
S ubstitute

Figure 2. Module Functions

WRITING COMPETENCY-BASED EDUCATION MODULES

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WRITING COMPETENCY-BASED EDUCATION MODULES

Eight basic questions provide the background information for writing CBE modules. They are: (1) What are the functional components of a module? (2) What is the cover page function (3) What is the introduction function? (4) What is performance objective function? (5) What is pre-assessment function? (6) What is learning experience function? (7) What is post-assessment function? (8) What is the reference function?

WHAT ARE THE FUNCTIONAL COMPONENTS OF A MODULE?

There are an infinite variety of formats for modules; however, a workable format must move the learner logically and sequentially through a series of events that will enable the learner to meet specified performance objective(s). An ultimate test of a module in terms of whether or not it delivers is the problem-solving model. One may test any module against whether or not the learner knows where he is now, where he is going, why he is going, how he is going to get there, and does he know when he has arrived. To accomplish this, the following skeletal format for modules is offered:

Cover Page
Introduction
Performance Objective
Pre-Assessment
Learning Experiences
Post-Assessment
References

WHAT IS THE COVER PAGE FUNCTION?

In the final analysis, the cover page function must be able to communicate and to attract the attention of the learner. This may be accomplished if four basic components are included: title, content table, prerequisites, and directions.

The title communicates active learning by adding an "ing" to the performance element action verb. For instance, the performance element "write a lesson plan" becomes the title "Writing a Lesson Plan." The second option, to thrust the title into an action form, is to change the performance element of the performance objective into a question. The performance element "write a lesson plan" might well become "How Do You Write a Lesson Plan?"

The second component of the module cover page should be a content table. It will serve as an advance organizer for the total module. The content table should include a listing of the format pagination. Thereby, a reader could scan the content table and then turn to the specific parts. The content table is particularly important for both the novice who is picking up a module for the first time and for the experienced module user who strives for learning efficiency.

The prerequisites component should also be identified on the cover page. Prerequisites should communicate to the learner the knowledges, skills, and attitudes necessary to enter the module. Basically, the prerequisites should be kept to a minimum; and, "no prerequisites" is a very distinct possibility. Prerequisites may be previous modules, a previous course, or a variety of other previous experiences. The ultimate prerequisite statement should enable the learner to decide whether he is ready for the module. However, the module should also test the learner for prerequisite competence.

The directions component should also be provided on the cover page. The directions are learning routes for the learner. Directions are not only needed on this page but should also be added at the end of each section within the module. Well developed module directions will weave the student efficiently toward competence.

WHAT IS THE INTRODUCTION FUNCTION?

The introduction to a module will usually follow the cover page and serves one primary purpose--to address the problem-solving model question, "Why is it important?" The "why" answer must be evident to the learner upon completion of the introduction. "Why" answers create interest, establish basic assumptions, and encourage the learner to set goals.

The introduction can accomplish interest creation if it arouses curiosity; is brief, clever, or stimulating; uses visuals, provides expectation of meaningfulness, looks like fun; or creates competition. These characteristics can also be used as a checklist for whether or not interest has been created and if "why" questions have been answered.

WHAT IS THE PERFORMANCE OBJECTIVE FUNCTION?

Performance objective must provide the pivot point for the entire module. Like all performance objectives, the module performance objectives must specify the learner outcomes, identify the conditions under which the performance should occur, and establish assessment standards.

The performance objectives used within a module may be terminal and/or enabling. It is essential that a terminal performance objective be identified. The terminal performance objective should receive a prominent place following the introduction. Enabling performance objectives may be provided as a process device and usually are clustered in groups of two or more. If the enabling objectives are accomplished, then the terminal performance objective will be accomplished. By indenting, one may locate enabling performance objectives on the same page with the terminal objectives. Enabling performance objectives are often placed as the headings for learning experience sections.

WHAT IS PRE-ASSESSMENT FUNCTION?

The pre-assessment function is provided in modules for two basic reasons. First, it provides the prerequisite test option. To illustrate, if a module has a prerequisite, then the prerequisite must be tested. The prerequisite may be tested by paper-and-pencil tests or any other means which provide evidence that one has met the module entrance requirements.

The second reason for a pre-assessment is to permit skipping part or all of the module. This pre-assessment option allows the student to move in jumps or skips throughout the module. The jump or the skip will be based upon demonstrated competence. This option is often called exemption testing. A convenient and efficient means of pre-assessment for the total skip option is to utilize the post-assessment as the pre-assessment.

The pre-assessment function also provides some opportunities for the learner. It helps the learner make decisions, allows the learner to self-pace, and serves as a learner diagnostic tool. The pre-assessment may also interface with the introduction by arousing curiosity. Finally, one should not be concerned about overusing pre-assessments. Pre-assessments are probably the most natural, non-threatening, learning device available.

WHAT IS THE LEARNING EXPERIENCE FUNCTION?

The learning experiences provide the meat of the module. Learning experiences permit the learner to accomplish the performance objectives. The learning experiences section divide and sequence the learning activities. Learning experiences cannot be undersold as a component of the module. All other module parts merely lead to or assess benefits of learning experiences.

The learning experience section should provide variety. It may be self-contained and should appeal to several senses, not just learning through reading. The section must include assessment, and may require supplemental information sheets. It should be domain consistent. In other words, the learning experience in a cognitive area should relate to a cognitive performance objective.

The learning experiences may include both crucial and enrichment learning experiences. However, all learning experiences should be action oriented. If these options can be provided within the learning experience section, the section will be a success.

WHAT IS THE POST-ASSESSMENT FUNCTION?

The post-assessment must test exit competence and facilitate criteria-referencing. It may deliver a comp-out option and may diagnose competency voids. Ideally, the post-assessment will close the learning/ teaching loop.

The post-assessment function may be simplified if several procedural points are followed. First, sampling may be used for testing knowledges, skills, and attitudes. Secondly, post-assessment need not go beyond the levels of the performance objective; and thirdly, it is essential that one test enough performances and collect enough data to be satisfied that competence has been achieved.

WHAT IS THE REFERENCE FUNCTION?

The reference function exists as a finalizing effort within the module. It should give credit for any materials, works, or ideas utilized within the module. The reference section should identify special resources needed to satisfactorily complete the module. It provides a listing of resources that would help facilitate the module facilitator in preparing for execution of the module. Finally, the reference section should prevent copywrite suits and keep one out of jail.

SUMMARY

The functional components of a module have been presented. Writing a module can be a rather simple task when the information provided earlier is mastered. However, the parts of a module should not be written in the same order as they are presented in the module. Figure 1 lists the final format and the developmental order for a CBE module. Basic content checks are included. One should bear in mind that this is just one format. There are infinite variations.

Figure 2 provides a critique system for modules. Note that the system incorporates the problem-solving model.

FINAL FORMAT	DEVELOPMENTAL ORDER
Cover Page	-
title	7
content table	10
prerequisites	2
directions for module	9
Introduction	4
answer "why"	-
PERFORMANCE OBJECTIVE - TERMINAL	1
optional enabling P.O.(s)	
Pre-Assessment	-
test prerequisites	3
allow learner to skip	6
Learning Experiences	5
module meat	-
develop learner	-
POST-ASSESSMENT	6
test exit	-
criterion-referenced	-
REFERENCES	8
credits	-
unusual resources	-

Figure 1. Format and Development of CBE Modules

HINT: Take at least seven sheets of paper and label each sheet with one of the above headings. Do what is required for each heading in the order listed under the DEVELOPMENTAL ORDER. When you have completed the first eight steps, shift your papers into the FINAL FORMAT and then write your directions and content table. Naturally, the number of module pages will vary. You will, no doubt, desire to revise after this point. Good luck!

	Yes=2	Maybe=1	No=0
DOES THE LEARNER KNOW WHERE HE IS?			
1. Title communicates			
2. Prerequisites clearly stated			
3. Testing options defined			
DOES THE LEARNER KNOW WHERE HE IS GOING?			
1. Development of knowledge, skill, or attitude evident in title			
2. Directions to next section evident at end of each section			
3. Development of knowledge, skill, or attitude evident in performance objective			
DOES THE LEARNER KNOW WHY HE IS GOING?			
1. Goal seeking is promoted			
2. Interest is aroused in introduction.			
3. Each module section related to other sections			
DOES THE LEARNER KNOW HOW HE IS GOING TO GET THERE?			
1. Conditions for performance evident in performance objective			
2. Sufficient number of learning activities to deliver on performance objective			
3. Learning activities are appropriate			
DOES THE LEARNER KNOW WHEN HE IS THERE?			
1. Measurement of performance facilitated . . .			
2. Pre- and post-tests available when required.			
3. Tests are criterion-referenced			
COLUMN TOTALS			

COMPOSITE CRITIQUE SCORE ________

MODULE RATING

____28-30 Ready for tryout
____23-37 Minor revision needed
____16-22 Major revision needed
____ 8-15 Parts may be useful
____0-7 Forget this one

Figure 2. CBE Module Critique

CONCERNS IN THE IMPLEMENTATION OF COMPETENCY-BASED TEACHER EDUCATION

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CONCERNS IN THE IMPLEMENTATION OF COMPETENCY-BASED TEACHER EDUCATION

When first introduced to competency-based teacher education (CBTE) one might state: "That sounds like a fine idea, but how can I ever put it into effect in my own institution." It is difficult to implement unless adequate resources are provided. Persons working with programs in brand new institutions may find the implementation process to be easier than to change a program already in existence. The time seems right for implementation of CBTE, however, as impetus for change is coming from many directions. The major concerns for implementation are: (1) program development, (2) flexibility of time, (3) standards and progress reporting, (4) materials, equipment, and facilities, and (5) staffing. These concerns will be discussed in the paragraphs which follow.

PROGRAM DEVELOPMENT

Two major routes may be taken in program development. The first route involves developing the entire CBTE program before beginning to use it, while the second route is to move gradually into using the CBTE program as it is developed. There are advantages and disadvantages associated with each route.

The major advantage of developing the entire program first is that it is a more orderly procedure. Materials are ready for students, and students know what to expect since objectives and requirements are neatly laid out. Major disadvantages are: (1) it is difficult to obtain sufficient feedback during development concerning how procedures will work,

(2) staff members are often teaching the old program while developing the new, and (3) waiting until the whole program is completely developed may mean that it is never completed.

If a decision is made to take the second route and implement the program as it is developed, it is very important that competencies be clearly defined in the beginning. Otherwise, a faculty may find it very easy to arrive at an unexpected destination.

It is possible to begin teaching a course for which competencies are defined and then develop performance objectives for each new set or cluster of competencies as one progresses; it is much easier for everyone, however, if the objectives are also written before the course begins. The second route was used in converting a methods class to CBTE. The procedures are explained below:

First Semester

A. Identify competencies
B. Develop performance objectives
C. Develop criterion tests
D. Continue group instruction
E. Continue norm-referenced grading

Second Semester

A. Refine objectives and criterion tests
B. Provide self-tests for students
C. Develop retests as needed
D. Switch to criterion-referenced grading
E. Provide as much remedial work as possible

Third Semester

A. Determine how content should be divided into modules
B. Develop some self-instructional modules
C. Fill in the gaps with group instruction

Fourth Semester

A. Provide a list of self-instructional modules and objectives at beginning of semester
B. Complete self-instructional modules as needed by students

Fifth Semester

A. Revise suggested time frame
B. Refine materials and procedures

The time required to make this transition to CBTE using the second route will obviously depend on prior experience of the program developer and the amount of time available. The procedure described is not suggested as a model to follow but simply as a possible plan. The steps are not as discrete from one semester to the next as the outline may suggest.

Advantages in using the second route include: (a) instructor receives more immediate feedback on progress, (b) added impetus to keep developing the program once materials are promised to students, (c) students can begin reaping the benefits from some of the changes sooner, and (d) students do not have to make sudden changes—there seems to be a remarkable grapevine concerning what to expect in a particular course.

Disadvantages are that (a) deficiencies at certain stages are more apparent to both students and instructors, (b) time pressures may mean that materials are sometimes quite rough, and (c) students may feel somewhat in limbo as changes are occurring.

If released time can be provided it is recommended that the entire program be developed before implementation. This route may also be feasible if there is a group effort. In the absence of the above two conditions, choose the second alternative, simultaneous development and implementation. It is recommended that a realistic time schedule be planned for the development and implementation of the CBTE program.

FLEXIBILITY OF TIME

The second major concern is time flexibility. Although one of the major tenents of CBTE is that learners can progress at their own rate, most are locked into a fixed time frame which assumes that all learners progress at the same rate. Even when instructors manage to achieve time flexibility within a particular course, a fixed time frame within a course may still exist.

All institutions may not find the same solution to the problem. It is recommended that an individual examine the regulations in the institution within which they plan to implement CBTE for safety valves to use in order to provide flexibility.

TIME FLEXIBILITY ACROSS COURSES

In an attempt to provide time flexibility some institutions have awarded variable credit at the end of the semester depending on amount of work completed. Marshall University had such a proposal reviewed several years ago that received considerable support. The plan was not approved, but more flexibility has been accomplished.

Another method of providing flexibility may be accomplished by letting students withdraw without penalty from a course just prior to semester exams. Students may pick up where they left off when they re-enroll if they have completed a sizeable portion of the work successfully.

There has been a very low withdrawal rate from classes when using the CBTE approach at Marshall University. Time pressures toward the end of the semester have sometimes been severe for certain students, but most finish. One or two students may withdraw during the first three weeks, but these same students often withdraw from school before the semester is over.

A second safety valve may be provided by giving incompletes. At Marshall University this safety valve opens easier at the graduate level than at the undergraduate level. Another safety valve that is already available on most campuses is to advise students who work more slowly to carry a lighter course load. One student may carry 21 semester hours and another only 9 or 10. Both students could be meeting requirements.

Examine the system to see what loopholes may be found in providing for time flexibility. When it has been proven that the CBTE system works, college and university policies may be changed to permit legitimate flexibility.

TIME FLEXIBILITY WITHIN COURSES

Theoretically, students should be able to work through course objectives completely at their own rate. Practically, guidelines must be set in view of an arbitrary completion date. The suggested completion time for modules may be changed each semester depending upon time required by previous students in the program. One class may set the pace by completing the first two-thirds of the modules ahead of a suggested schedule. The severe end-of-semester pressures may be avoided by an early completion.

Criterion tests may be rescheduled if students request it. Students may ask for tests earlier, sometimes later, depending on other time demands. In the home economics program at Marshall University, students do not take the criterion test with the remainder of the class if they are completely unprepared. There is considerable latitude as to when students must complete a particular test with an acceptable score. About halfway through the course, students complete all work up to a certain point. This procedure accomplishes two things: it helps students pace their work and makes the job of teacher possible. By mid-term, the teacher may pull retests for about 15 or 20 different criterion tests. It is difficult to deal with that many retests at one time with the amount of time and help teacher educators usually have available.

CBTE permits flexible use of class time rather than requiring it once the evaluation system is dealt with. Even though a class is scheduled three hours a week, it may not always meet. Part of the time may be used for individual conferences; some days may be used for criterion tests; some for retests; and some for special help. Occasionally, filmstrips or slides could be shown during class time;but students are not penalized if they prefer to see them at another time or if they choose a reading instead. A class discussion may be scheduled on topics as students indicate the need.

STANDARDS AND PROGRESS REPORTING

The third major concern is grading and progress reporting. Teachers will find themselves in a dilemma as most are required to report letter grades. Some institutions have initiated a policy permitting students to take a certain number of credits on a pass/fail basis for about five years and, more recently, students have been allowed to take a few courses outside of their major field on this basis. Reactions are mixed and a return may be made to giving letter grades for student teaching. Supervising teachers other than those in home economics have indicated that student teachers don't work as hard. Studies from other institutions have indicated that achievement is lower with pass/fail. A CBTE type of program stimulates more effort among students whether or not letter grades are given. No data supports this claim, but informal observation over a several year period influences the author's belief. The microteaching program was an experiment begun in the fall of 1969. It was so successful that the efforts were expanded in that direction. Until last year, students received no letter grade as the experience was simply listed as a requirement for other courses. Students came to their microteaching session even when they missed all other classes the same day. The constant feedback students received really made final letter grades unnecessary. The experience was attached to other classes. Actually, one year a microteaching experience was operated for 24 clock hours that wasn't attached to anything. Students simply had to meet the requirement. Students who were enrolled in an Educational Foundations class substituted this experience for a live observation in the public schools. When EDF dropped the laboratory requirement, our students completed the experience even though they received neither grades nor credit. Two one-hour courses were later added to our program which included microteaching.

Advocates of letter grades maintain that grades stimulate effort. This use of grades may teach students to work for the external reward. It is preferable for students to find satisfaction in working to meet specified standards and eventually set their own standards of performance. A couple of years ago when supervising teachers sent mid-term progress reports for student teachers, one teacher responded to the question concerning weaknesses by saying that the student teacher was working too hard. That is the kind of weakness one likes to hear about.

Abolishing letter grades would make very little difference in student effort and achievement. Many of the achievement comparisons have been made in either elective or general education courses with passing meaning a D or better. If all a student has to do is pass with a D, he/she isn't likely to exert much effort. Making a D isn't good enough in a major subject or in professional education. Students must maintain a C average in general education, in professional education and in their major. This policy is better than just an overall C average, but making a B in an Educational Foundations class and a D in Methods does not guarantee success in teaching. A CBTE program permits the maintenance of standards for each course and each competency.

Grades are not necessary, but if necessary can be awarded. In evolving a system for awarding grades with CBTE, there are several changes in thinking that must be made. The first change is to forget about the normal curve. The second concerns letting superior achievement on one competency average out with marginal achievement on another competency. Another change is to stop considering the score on a particular criterion evaluation as final.

One educator has justified abolishing the concept of the normal curve on the basis that the normal curve occurs by chance. Since education is supposed to be intentional rather than a chance occurrence, why should we expect a normal distribution of grades? The range of grades that occur are likely to reflect the standards set. Thus if 70 per cent standards for objectives are set, some D grades may be expected. If 85 per cent standards are set, only A and B grades will be made if all students meet requirements. Students will meet whatever expectations are set forth in objectives if a system is devised whereby the first effort to master a competency is not necessarily the last opportunity.

There are two basic ways to differentiate among letter grades with CBTE programs. First, vary the standard of achievement required. Second, vary the number of competencies. For undergraduate courses, the first pattern may be used. Adding additional competencies for an A does not seem feasible considering the extent of basic requirements. For graduate courses, the second pattern is frequently used with varying requirements, or a combination of varying requirements and varying standards. Contracts work quite well with graduate students. Students may contract for grades on the basis of both scores and number of modules completed. Stipulations may be built in relating to pretest scores so that students can test out of modules. If students choose to complete a module that they tested out of at a B level, they are required to improve the posttest score.

Different patterns were used for contracts last summer with two graduate level workshops. In one workshop, teachers developed learning packages for home management. In order to make a B each teacher developed a specified number of packages of an acceptable quality. For an A, teachers developed a few more packages but they also had to demonstrate competencies relating to reviewing and revising packages. Behaviors had to demonstrate a contribution to the overall success of the project. In short, teachers earning an A were required to demonstrate certain leadership competencies. In the other workshop, Innovative Teaching Techniques, both the quantity and quality of work varied for different letter grades. For example, participants contracting for an A developed both a simulation and a game, whereas, those contracting for a B developed one or the other. Participants contracting for an A had to achieve higher test scores and also formed review teams to check all products developed. Feedback is used in revising teaching materials.

Although more time is spent with evaluation in a CBTE program, the end of semester trauma is lessened. Participants have either met the standards for an A or they haven't,and there is no mystery involved as to what the requirements are. When contracts are used, students who see that meeting standards for an A is unrealistic are likely to change their contracts voluntarily.

MATERIALS, EQUIPMENT, AND FACILITIES

The main points to consider in relation to A-V equipment for CBTE are: (a) choose equipment that is easy to use; (b) have equipment readily accessible to students; (c) single-purpose rather than dual-purpose equipment permits more students to work at one time; (d) the smaller size in A-V equipment is a space saver; and (e) earphones reduce the noise level. An additional point is that early mastery of competencies relating to use of A-V equipment is essential if participants are to be able to use the equipment for self-instruction.

Materials for CBTE present a two-pronged problem. Finding suitable resource material is difficult as traditional textbooks seldom meet the demand. The second part of the problem is making the material available to students. It may be found that existing materials either provide only a superficial coverage of topics or they assume prior knowledge the beginner does not have. Thus, it is often necessary to write self-instructional modules and then write the missing supporting material. Even when good material is available on a topic it is likely to come from a dozen different sources including books, brochures, pamphlets, journals, conference reports, and curriculum guides. Non-profit media is not available on many topics. Since many of the resources are not of the type that can be neatly cataloged and placed on a library shelf, labeled boxes will help keep material in some semblance of order and enable participants to find what they need. Color coding and other symbolic coding (usually coinciding with the code for modules) also helps. As a long range solution it may be necessary to write texts specifically designed to accompany modules in order to reduce the sheer volume of resources that are required. Students also seem to like self-contained modules which have the supporting material included.

STAFFING

We all remember the furor several years ago when educators feared that teaching machines would replace teachers. Not much is heard about that concern any more—instructors are busier than ever as they move into CBTE. For one thing, the minute the challenge is accepted that all participants will achieve a pre-specified level of mastery, the teacher is busier than ever. In another five years the work will ease off; the system will be operating smoothly and the materials will be developed. A major aspect of the CBTE system is the feedback loop. How is the system working? Have conditions changed which require new competencies? What other improvements are needed?

Most of the individuals who decide to develop or continue a CBTE program will probably spend a major part of their time in program development. The amount of time devoted will depend largely on the amount of assistance received from other persons during implementation. It may be necessary to delegate implementation of some favorite activity to other persons if time is found for program development.

An assistant may assume the responsibility for administering criterion tests, grading, and recording scores. The responsibility for test development and for checking work that cannot be scored by an inflexible key must also be assumed by someone. Assistants can help with assembling, distributing, and filing materials. Training assistants is a never-ending process as many are temporary staff. Furthermore, the tasks to be done change from year to year during program development.

It has been said that the true success of an innovation can be judged only by the success persons other than the original developer have in implementing it. Innovative programs have been known to collapse when the developer moved on. CBTE is a rather grandiose scheme which ties together a number of educational innovations.

It often seems easier to develop a program and then find persons to help implement it. Broader involvement in the original development will help insure that the program is carried out as intended. As new personnel join the staff, it is very important to help them understand the overall philosophy of the program as well as specified procedures. This broader understanding often influences how faithfully day-to-day procedures are carried out and the kind of adjustments that are made.

Educators have stopped talking about teacher-proof curriculum and concede there is probably no such thing. At first glance, CBTE might appear to be teacher-proof. It isn't--a million things can go wrong. For instance, an instructor may start awarding grades on the basis of the number of activities performed rather than on achievement. This misses the whole spirit of CBTE. Or consider the matter of pre- and posttesting. Several years ago, someone on our campus developed a module for all secondary education students on the teaching of reading. It seemed to be a great idea, but my students reported that assistants gave the pretest and then showed students what they missed. Since the pre- and posttest were the same, most students went ahead to the posttest with no further study and simply tried another answer for questions they had missed. Obviously, this procedure also missed the point of CBTE as criterion tests usually measure only a sample of the desired behavior. Students learned more about psyching out a test than they did about teaching reading. Our students admitted that they recognized that they missed important learning, but took the easy way out because the system allowed it and there were more pressing demands on their time.

Having another educator attempt to use the material developed does help us pinpoint weaknesses in modules. These weak spots can also be pinpointed if analyzed at points where students require further clarification. As long as we are the only ones using the material, failure to recognize further clarification provided and needed may be overlooked.

Actually, students are the best evaluators of CBTE materials. One problem encountered when having students evaluate the materials is that of getting more data than can be analyzed. Unless assistance in analyzing feedback is provided, a limitation may be made on the number of students providing feedback for each module.

As instruction is individualized, greater and greater demands are made on time. There are certain procedures that can be introduced to share the load and make more efficient use of time. Consider the matter of retests. It is time consuming to permit students to take retests individually. With limited time available, set aside certain times when students can take whatever retests are needed. Students from other classes may also attend at these times. More times for retesting are needed but time pressures prohibit this expansion. One solution would be to make a weekly schedule for retests and make-up work from all classes in the department or division. Each staff member could monitor tests from any class during a specified time period.

SUMMARY

Only a brief discussion has been provided of the many problems associated with implementing CBTE programs. The particular problems faced and the solutions found will differ within each institution. No final answers are given. The program at Marshall University is still groping for answers. Some days the problems seem insurmountable. However, when a comparison is made with the program as it was before CBTE, the effort seems very much worthwhile.

TOWARD A FRAMEWORK FOR IMPLEMENTING
COMPETENCY-BASED TEACHER EDUCATION

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TOWARD A FRAMEWORK FOR IMPLEMENTING COMPETENCY-BASED TEACHER EDUCATION

OVERVIEW

The preceding papers have dealt with competency-based teacher education (CBTE) from a most positive point of view. Houston perceives CBTE as having the potential to affect major changes in the field of teacher education. Hamilton and Fairdig provide evidence that there is a great deal of support for CBTE as a relevant movement. Discussions by both Vogler and Blankenship reveal that CBTE can be implemented in a university setting and that it does actually work.

Of course, there is not complete agreement by all teacher educators as to the worth of CBTE. A number of persons have raised serious questions about the nature of CBTE and its ultimate value as a movement. Merrow (1975) points out that CBTE has serious shortcomings in the areas of administration, politics, philosophy, and cost. Nash (1973) has made a strong plea for CBTE to be more humanistic in nature. Merrow and Nash are perhaps representative of those who do not fully support the CBTE movement or who seriously question its basic precepts. These few statements, hopefully, will serve as a cautionary note to anyone who is contemplating the establishment of a CBTE program. While CBTE has garnered much support at national, state, and local levels, it is certainly not all things to all people and must be dealt with in a corresponding manner.

The discussion which follows is based upon the premise that implementing CBTE does not differ markedly from making any curricular change. While it is easy to recognize that CBTE has certain peculiarities, the business of implementing any new curriculum raises several fundamental concerns. This paper attempts to deal directly with these concerns and incorporate them into a conceptual framework for implementing CBTE. Initially, teacher education curriculum development is discussed. This is followed by the identification of vocational teacher education program types, potential implementation constraints, and implementation options. Finally, a framework is proposed which takes into account these program types, constraints, and options.

CURRICULUM DEVELOPMENT IN TEACHER EDUCATION

Although the curriculum renewal process is quite often associated with secondary and post-secondary vocational education, it seems to become a less frequent occurrence as far as vocational teacher education is concerned. By their very nature, teacher education programs are often constrained by a number of forces such as college course structure, certification requirements, and credit hours. The result has been maintenance of rather traditional teacher education curricula which have not always focused on meeting graduates' professional needs. While vocational education curricula have undergone numerous revisions and modifications so that graduates would be better able to survive in the world of work, many teacher education curricula have not been equally responsive to the needs of their graduates. There is certainly nothing wrong with tradition _per se_, but it is important that teacher educators examine today's and tomorrow's needs and determine just what sort of curriculum renewal should take place. As Swanson (1974) points out,

> it may be necessary to create entirely new norms or forms of teacher preparation, including the creation of entirely new

> types of institutions, to insure that vocational teacher preparation will not operate at the margins of technical competency.

The actual business of teacher education curriculum development should not be thought of as a simple task which can be accomplished in a few days. Rather, it constitutes a major undertaking and represents a strong commitment on the part of professionals and students at all levels. Teacher education curriculum development may be represented by four stages: the need stage, the design stage, the development stage and the implementation stage (Cruickshank, 1971). As Cruickshank indicates:

> During the need stage, the training agency organizes for change and establishes needs and priorities in teacher education curriculum; the design stage includes efforts to identify programmatic thrusts that hypothetically will reduce or eliminate the needs; in the development stage, the training agency seeks to build or adopt new training components and support subsystems; during the implementation stage, the new components and subsystems are tried out.

This process with its four stages has several important implications for teacher education in general and CBTE in particular. First, taken together, the four stages represent a systematic approach to curriculum development. All too often, change is made merely for the sake of change. The four stage process assists in overcoming this sort of difficulty by first identifying what needs actually exist and then proceeding to reduce or eliminate these needs.

A second implication may be drawn from the long-range commitment to change. If the developmental process is to have any lasting value, persons involved in this effort must look at programmatic change rather than merely attempting to find some immediate solution to a complex problem. If, for example, there is a need to develop a vocational teacher education curriculum which will prepare teachers of handicapped students, plans should be made to deal with both the process of preparing teachers and the impact of newly prepared teachers on their students. While it is recognized that a long-range commitment to curriculum development and study is most difficult to make, the rewards more than offset this extra effort.

A third implication derived from this process is concern for trying out components of the new program and thus insuring that they do make a difference. While it is easy to speculate that students will learn and enjoy their learning, there is no substitute for systematic examination of program operation. The result of such an examination will be useful feedback about the program which may ultimately lead to program refinement.

VOCATIONAL TEACHER EDUCATION PROGRAMS

Within the broad context of teacher education curriculum development, there always exists the specific concern for one's own particular situation. The general and abstract must eventually become specific and concrete if change is ever to take place. Consequently, it becomes important to identify the exact kinds of vocational teacher education programs which might lend themselves to CBTE implementation. While, at first glance, it may appear that vocational teacher education is restricted to teacher education institutions, this is far from the truth. Teacher education institutions do make a substantial contribution to the preparation and upgrading of vocational teachers; however, there are others who may also perform these tasks. In recent years, many local education agencies have taken on a greater responsibility for secondary vocational teachers' in-service education. Post-secondary institutions (community colleges and technical institutes) have also been moving in the direction of providing their own in-service teacher education. Thus, it may be seen that both teacher education institutions and employers have the responsibility for educating vocational teachers with employers placing a greater emphasis on in-service work.

The different ways that vocational teacher education may be arranged also have importance to CBTE. Some teacher education programs are set up by vocational service area while others are offered on an across-the-board or comprehensive basis. In a number of instances, some core or common offerings are provided to all students with the remainder of course work in each student's teacher education program taken through a specific area. Although the foregoing is common knowledge to many, it has been brought up to point out the range of possible ways that CBTE might be offered. The fact that pre- and in-service vocational teacher education might be offered by a number of different institutions and agencies on an across-the-board basis or by service area points up the need to account for this variation during the CBTE implementation process.

POTENTIAL IMPLEMENTATION CONSTRAINTS[1]

While the actual type of vocational teacher education program may, in itself, be a deterrent to CBTE implementation, there are other potential difficulties which can arise when CBTE is being installed. These seem affected to a greater or lesser degree by program type but are also tied closely to the teacher education setting. Five potential constraints which may show up during the CBTE implementation process include: identification of competencies; instructional materials; roles of faculty and students; interaction with various groups, institutions, and agencies; instructional support; and costs (Finch and Hamilton, 1975).

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[1] For a more detailed discussion about implementation constraints see Finch, Curtis R. and James B. Hamilton, "Performance-Based Teacher Education Curricula: Implications for Programs," in (Anna Gorman, ed.) The Changing Educational Scene. Columbus: The Ohio State University, Center For Vocational Education, 1974.

Identification of Competencies

When a competency-based teacher education program is being developed or plans are being formulated for an existing program to move in this direction, a primary concern is with the identification of competencies. Since teacher competencies serve as a foundation for CBTE, errors at this point may result in the establishment of a program that lacks validity. One of the major criticisms leveled at some CBTE programs is that they merely "teach the same (and perhaps irrelevant) content with a new and improved framework (Sinatra, 1973)." The key issue then seems to be that of identifying competencies which actually maximize the probability of teaching success. Closely associated with this issue is the establishment of priorities for competencies. Given a comprehensive listing of valid competencies, how can teacher educators select those which are most beneficial to the student (assuming that institutional or agency constraints do not permit all to be taught)?

Instructional Materials

As an institution or agency moves forward with the business of implementing CBTE, an immediate need is felt to obtain and/or develop instructional materials. These generally take the form of modules (learning packages) and supporting mediation (e.g., videotapes, films, reference materials). Although there is general agreement among those in CBTE as to what constitutes a module's component parts, several questions may be raised about what it should actually do. For example, does the module "deliver" on a certain important teacher competency or set of competencies? Is it functional and usable? Does it change teacher behavior? What are the effects of modularization on a grand scale? These as well as others are legitimate questions which may be raised about instructional materials that are typically used in a CBTE program.

Roles of Faculty and Students

The roles of faculty and students will most certainly change when a CBTE program is implemented. Or, put another way, if faculty and student roles are not revised the program is probably doomed to failure. One may wrongly assume that change is a relatively simple task. In fact, people (particularly faculty members) may not be receptive to the idea of being involved in "another" new approach to teacher preparation. Faculty may be threatened by the thought of losing a little personal autonomy while students might not relish interacting with instructional packages. Indeed, all who will be associated with a CBTE program can raise meaningful questions about their respective roles.

Interaction With Various Groups, Institutions, and Agencies

Closely aligned with the CBTE movement is the idea of increased interaction with various groups, institutions, and agencies. For example, competency-based certification being implemented in many states is serving to better align teacher education programs and certification requirements. Much collaborative work will surely need to be done before programs and certification are in alignment. Interaction with local education agencies will, likewise, be increased. CBTE has placed a great deal of emphasis upon field-centered instruction where the student will apply principles learned in an actual school setting. This may include many more instances of "supervised teaching" than would normally be found in a traditional teacher education program. The implications for interaction with local education agencies are obvious, and in some cases, difficult to predict. Logistics associated with field-centered instruction are often extremely complex, especially for universities located in a more rural setting. Generally, areas in which increased interaction is necessary include teacher education institutions, local education agencies, state education agencies, and other interest groups (e.g., NEA, AFT, AVA, NCATE, AACTE).

Instructional Support

In order for any teacher education program to function properly, adequate instruction support must be provided. This may take the form of classroom space, audiovisual equipment, student records systems, resource centers, and similar items.

As with many instructional programs which break with tradition, CBTE requires that support be realigned to fit its unique needs. This realignment is, for the most part, necessitated because of a shift from traditional practices to mastery learning and individualized instruction.

Since students will be learning at their own particular rates and demonstrated competence (rather than grades) serve as records of assessment, facilities must be available to meet their particular needs. Typically, a CBTE resource center that contains relevant resources such as references and media is made available to students. A resource person is generally located at the center to assist students in the completion of various module learning experiences. Of course, the lack of such a center may pose a problem to many teacher education institutions and some persons may question its practicality. Other potential problems in the instructional support area include, but are not limited to, making provisions for in-service teacher education, recording student mastery of various modules, and resolving conflicts between the academic calendar and variations in student progress.

Costs

A final area of concern is CBTE program cost. Many persons have negative feelings about this important aspect of CBTE implementation, particularly in light of recent budgetary cuts at various colleges and universities across the country. The primary issue associated with costs seems to be one of comparisons between CBTE and traditional programs. Persons inquiring about CBTE generally ask how much more it will cost or how much more they get for their investment. At this point in time it appears many are asking about increased institution budgets *per se* rather than costs in relation to benefits or effectiveness.

IMPLEMENTATION OPTIONS

When the time actually arrives to implement CBTE, there are several options open. The choice may be made to replace a traditional program with one which is completely competency-based. This, of course, would entail an extensive amount of pre-planning and require that numerous resources be on hand for use by teacher educators and students. Each of the five potential constraints to implementation might have considerable impact on this option since it represents the greatest immediate commitment to CBTE. The choice to completely replace a traditional program also has impact on the way a vocational teacher education program is arranged. If a program deals exclusively with part-time in-service teachers from one vocational service area, the replacement approach will certainly create difficulties but would be nothing approaching the difficulties encountered with a program which includes pre- and in-service teacher education for persons in numerous service areas.

A more conservative option to CBTE implementation might be the offering of dual programs, one of which is traditional and the other competency-based. This choice has a distinct advantage in that it should enable students to choose which program best aligns with their needs and learning styles. There are, however, several potential problems with this option. Even though teacher educators may well recognize that the traditional program will eventually be replaced, the cost of operating two separate programs can sometimes be prohibitive. Other possible constraints might include the confusion over faculty roles and the range of instructional support which may be needed.

A third possible option for the teacher educator is to focus initially on implementing one CBTE component of the total program. This choice allows teacher educators and students time to "shake down" the system and identify and eliminate problems before they show up across the entire program. It also enables teacher educators to focus on a more narrow aspect of the program, and thus build high quality CBTE. Taking the component option route could, however, have a damaging affect on commitment. Obligations to make a certain number of program components competency-based each year may soon be overshadowed by other priorities such as maintaining certain enrollment levels or providing graduate level studies. Since it is often found that priorities shift dramatically from year to year, the business of slowly phasing in CBTE may end up being only partially realized.

A PROPOSED FRAMEWORK FOR IMPLEMENTING CBTE

While it is virtually impossible to speak to all the possible teacher education program types, implementation constraints, and implementation options; it is nonetheless important to be aware of what might be associated with a CBTE implementation effort. Figure 1 serves as a graphic representation of these areas. Its purpose is to assist teacher educators in "thinking through" the CBTE implementation process and recognizing that simple decisions and plans are not always possible. It may be noted that three dimensions are represented in the schema which is presented. These constitute the three foci of CBTE implementation: types of programs, potential implementation constraints, and implementation

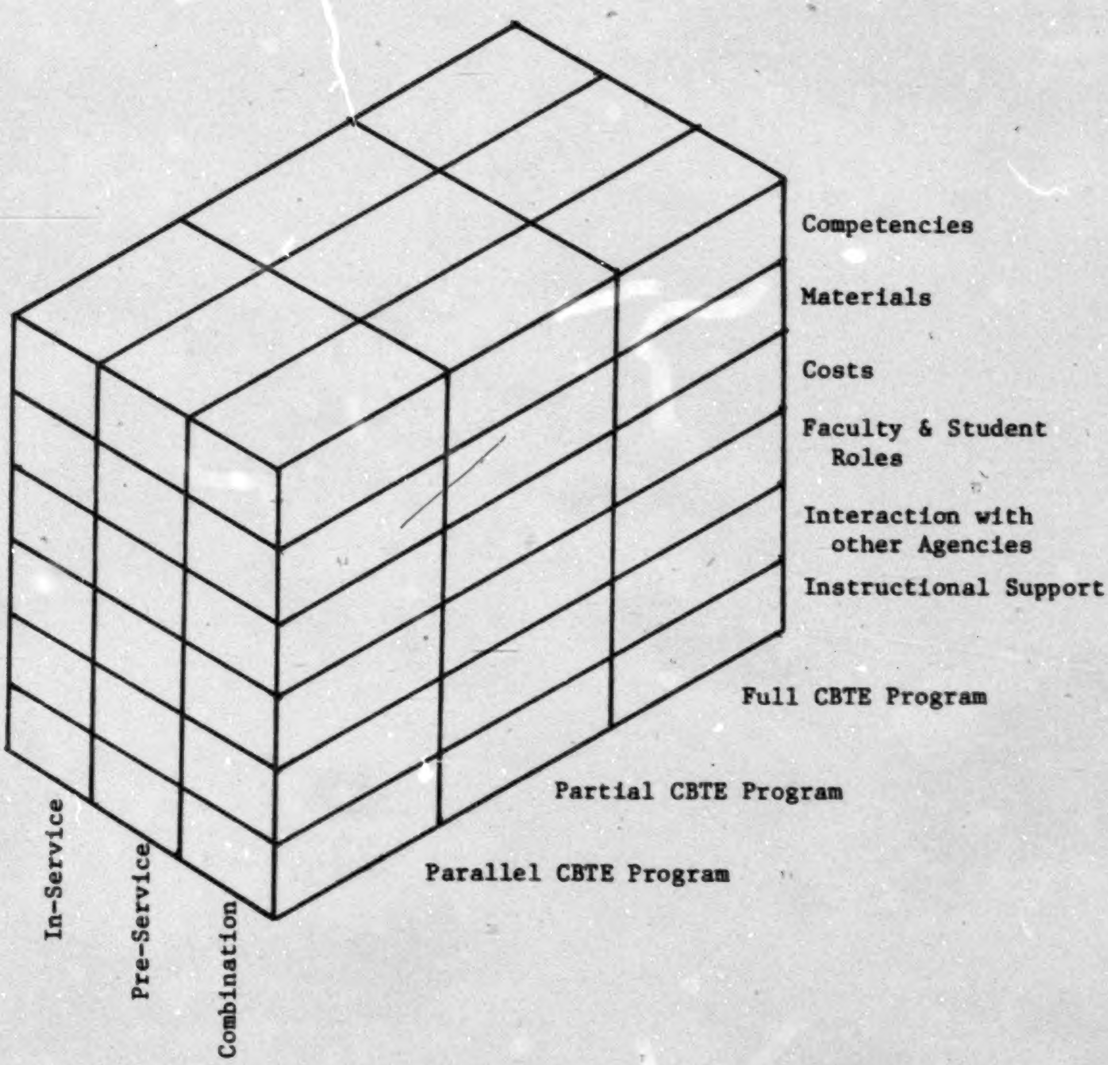
Competencies
Materials
Costs
Faculty & Student Roles
Interaction with other Agencies
Instructional Support
Full CBTE Program
Partial CBTE Program
Parallel CBTE Program
In-Service
Pre-Service
Combination

Figure 1. Factors Associated with CBTE Implementation: A Conceptual Model*

options. As data are gathered in support of these dimensions, the teacher educator should begin to see what the best implementation option is for a particular setting. While one may recognize that this sort of decision-making is not the most objective in the world, it is much more so than merely taking the first idea that comes along.

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*Representative factors are provided. No attempt has been made to be all inclusive.

CONCLUSION

This paper does not provide the specific answers to CBTE implementation that many teacher educators would like to hear. Instead, it has presented a framework within which the implementation process may be examined and refined. In fact, each vocational teacher education program is unique. It is closely tied to a specific set of standards, constraints, and operational guidelines; each of which must be accounted for as CBTE is being implemented. The framework which has been presented is designed to address these unique needs. Hopefully, it will enable teacher educators to consider the many factors associated with CBTE implementation and make each new program a stronger one.

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CE 007 727